

To be returned to the Academic Registrar,
UNIVERSITY OF LONDON,
SENATE HOUSE, W.C.1.
with the Examiner's Report.

ALLCHIN (F. R.)

Ph. D.

1954

(Indian Archaeology)

Vol. 1-2



ProQuest Number: 10752574

All rights reserved

INFORMATION TO ALL USERS

The quality of this reproduction is dependent upon the quality of the copy submitted.

In the unlikely event that the author did not send a complete manuscript and there are missing pages, these will be noted. Also, if material had to be removed, a note will indicate the deletion.



ProQuest 10752574

Published by ProQuest LLC (2018). Copyright of the Dissertation is held by the Author.

All rights reserved.

This work is protected against unauthorized copying under Title 17, United States Code
Microform Edition © ProQuest LLC.

ProQuest LLC.
789 East Eisenhower Parkway
P.O. Box 1346
Ann Arbor, MI 48106 – 1346

THESIS FOR THE Ph.D. DEGREE
Submitted to the University of London,
Faculty of Arts

by

FRANK RAYMOND ALLCHIN, B.A.

School of Oriental and African Studies

June, 1954.

THE DEVELOPMENT OF EARLY CULTURES IN THE
RAICHUR DISTRICT OF HYDERABAD"

THE DEVELOPMENT OF EARLY CULTURES IN THE RAICHUR
DISTRICT OF HYDERABAD: ABSTRACT
OF THESIS.

The text of the thesis is divided into two volumes. The first (Chs. I - V) contains a geographical account of the environment, a gazetteer of sites previously reported in the district and an account of such other archaeological research in peninsular India as has bearing on Raichur District. It also includes a lengthy account of my explorations in the district and of the excavations I conducted at Piklihal, near Mudgal. Finally, Ch. V is a straight forward analysis of the pottery sequence revealed by excavation and exploration in the district.

Volume II is an attempt to synthesize the evidence (both new and old) collected in the first volume with whatever other evidence appears relevant. The aim is twofold: to produce the fullest account possible today of the various elements of the cultures of Raichur District, employing evidence from outside the district to reinforce those details which are still little known within, for example of the Southern Iron Industry and Grave Complex. The culture sequence begins with the earliest settlements known (the Neolithic) and ends with the Medieval Culture which is essentially that of the

villages today. The second aim is to link the culture sequence in space and time with that of the North Kannada region, and to compare it with that of the adjoining regions of Peninsular India (Ch. XI). Finally a tenuous outline for the comparable culture sequence of Northern India is suggested as showing the lines along which similar research should proceed in that area.

Certain key terms are used throughout the thesis in a sense not common in modern archaeological works (particularly 'culture' and 'industry'). These and a number of new terms coined for this work are discussed in the Introduction.

P R E F A C E

The great length of this thesis is determined by the inclusion of a lengthy gazetteer of those sites in Raichur which had been visited by others, and of a full account of my own explorations and excavations of the district. It seemed necessary that this material should be placed on record, and therefore I decided to include it. I further included a very detailed analysis of the pottery I collected in the district. This is, I believe, almost the first time that a collection of Indian Pottery has been subjected to a technological and morphological examination of this scale, although Naiyar's thesis for this University on "South Indian Pottery" remains a pioneer study of great value. All this material constitutes the prime evidence upon which much of the second volume is based.

For those who wish to study the development of the early cultures of Raichur District in their wider aspects, it will suffice to leave aside Chapters II, III, IV and V and pass from Chapter I to VI, referring back to the others only when requested in the Text.

The comparative parts of this work, particularly in Chapters V and XI would have been almost impossible to write ten years ago before the publication of Ancient India 1 - 5

and of Marshall's Taxila. It is not easy to estimate the peculiar importance of the latter work - providing as it does a magnificent corpus of so many classes of objects. This is also true of the published excavations and selections of pottery in the former works. Similarly the whole perspective of Chapter XI would have been clearer had it been possible to include a study of the results of the momentous excavations of the University of Allahabad at Kausāmbī. It is this report that must now be awaited to carry forward the archaeology of the Ganges Valley Civilization from the stage it had reached when Marshall ended his important excavations at Bhita.

The system of transliteration followed in this work generally follows that accepted by the International Congress of Orientalists at Athens in 1912, but throughout is modified in accordance with the excellent precedent established by Vincent Smith. Thus all diacriticals are discarded excepting long vowel signs where necessary. For all place names I have followed current geographical convention. In a few cases I have adopted unconventional forms for words which appear to have achieved independent English usage, as Kushan for Kusana, Krishna for Krisna, Vishnu for Visnu, etc.

C O N T E N T S

Preface.

Contents.

List of Plates.

Abbreviations.

<u>Introduction:</u>	1) The need for Regional Studies in Indian Archaeology	1.
	2) Plan of the Work	5.
	3) Terminology	7.

Chapter I: The Geography of the Peninsula of India.

The peninsula of India: its cultural regions 28.
Upland and Coastal Zones 28. Rock Foundations 31. The Kannada Region 40. Raichur District; its rock formations 44. Its minerals 46. Its soils 48. Drainage 50. Rainfall 51. Forestation 53. Agriculture 54. Notes and Refs. 58.

Chapter II: Previous Explorations and Excavations.

Previous Explorations and Excavations in Raichur 61.
Key work in Neighbouring Area: Meadows Taylor 92. Brahmagiri and Chandravalli 94. Sanganakallu 99. Kondapur 103. Arikamedu 108. Notes and Refs. 112.

Chapter III: Explorations, Short list of Sites. 115.

Benkal forest area 121. Gadwal area 144. Maski-Lingsugur - Mudgal area 164. Miscellaneous, settlements 186. Miscellaneous, graves 212.

Appendix I. Analysis of Grave Types in the District 220.
Notes and Refs. 234.

Chapter IV: Explorations and Excavations at Piklihal, near Mudgal.

Explorations 237. Rock Paintings and Bruisings. 247.
Excavations 254. Summary of results 266.

Appendix A - Pottery	270	Appendix F. - Bangles	277.
" B - Terra-cotta objects.	271	" G. - Human Remains	277.
" C - Stone objects.	271	" H. - Animal Remains	277.
" D - Metal objects	275	" I. - Soil sample	277.
" E - Beads	275	" J. Snails	278.

Chapter V. Pottery Technology and Morphology.

Technology, A wares 280. B. wares 291. C wares 305.
D wares 311. Morphology, A wares 315. B.1 ware 316.
B wares 320. C wares 324. D ware 237. Terracottas,
Technology and Morphology 329. Notes and Refs. 333.

<u>Vol. II. Chapter VI. The Early History of the Peninsula</u>	
<u>in the Light of Archaeology</u>	336.
Notes and References	359.

Chapter VII. The Neolithic Culture A and B.

The Settlement 362. Food 369. Technology 373. Trade and
Communications 383. Social System and Population 385.
Burial Customs 389. Religion and Arts 391. Extent of the
Culture 393.

Appendix I. The Ash Mounds, List of Sites 402. Dating 406.
Purposes or Origin 408. Composition 410. Local Traditions 411.
General Conclusion 414. Notes and Refs. 418.

Chapter VIII. The Post-Neolithic Culture.

The Settlement 423. Food 427. Technology, The Southern
Iron Industry 430. The Southern Iron Typology 439. Other
Metals 446. Stone Working 448. Trade and Transport 452.
Population and Social System 455. Burial Customs, the
Southern Grave Complex 457. Main types of Burial 458.
Literary references 468. Modern Burial Practice 470.
Conclusions 474. External Affinities 476. Religion 479.

Appendix I. Stone Alignments 485. Notes and Refs. 496.

Chapter IX. The Pre-Medieval Culture A and B.

The Settlement 505. Food and Agriculture 508. Technology
511. Trade and Communications 515. Population and Social
System 520. Burials and Burial Customs 522. Notes and
Refs. 526.

Chapter X. The Medieval Culture: Some Aspects.

The Settlement 527. Agriculture 531. Technology 533.
Burials 535. Notes and Refs. 540.

Chapter XI. Dating the Cultures.

The Raichur Culture Sequence. Dating the Neolithic A and
B 541. The Post-Neolithic 542. Red-and-black ware 543.

Iron Working 545. Southern Grave Complex 551. The Pre-Medieval A and B and Medieval Cultures 556. Comparative Chronology of Sites of the Kannada Region 559. Comparative Chronology - The Tamil Plain 560. The Andhra Coast 565. Mahārāstra 566.

The Culture Sequence of North India 571. Notes and Refs. 583

Bibliography 587.

Vol. III. Plates and Catalogue of Illustrated objects.

A B B R E V I A T I O N S

A.A.S.O.R.	Annals of the American Society for Oriental Research.
A.B.O.R.I.	Annals of the Bhandarkar Institute of Oriental Research.
A.I.	Ancient India.
A.I.O.C.	All Indian Oriental Congress.
A.R.A.D.(M).	Annual Report of the Archaeological Department (Madras)
A.R.A.S.I.	Annual Report of the Archaeological Survey of India.
A.R.H.A.D.	Annual Report of the Hyderabad Archaeological Department.
A.R.M.A.D.	Annual Report of the Mysore Archaeological Department.
A.R.S.I.E.	Annual Report of South Indian Epigraphy.
A.S.A.R.(S.C.)	Annual Report of the Archaeological Survey (Southern Circle).
C.P.A.	Catalogue of Prehistoric Antiquities from Adichanallur and Perumbair.
D.C.R.I.	Deccan College Research Institute.
D.G.A'S REPORT	Director General of Archaeology's Report.
Ep.Ind.	Epigraphia Indica.
H.A.D.	Hyderabad Archaeological Department.
H.A.S.	Hyderabad Archaeological Series.
I.H.Q.	Indian Historical Quarterly.
I.M.M.	Indian Meteorological Memoirs.
Ind.Ant.	Indian Antiquity.
I.P.P.A.	Indian Prehistoric and Protohistoric Antiquities (The Foote Collection of)
J.A.S.B.	Journal of the Asiatic Society of Bengal.
J.ANTH.S.B.	Journal of the Anthropological Society of Bengal.

J.B.B.R.A.S.	Journal of the Bombay Branch of the Royal Asiatic Society.
J.D.L.C.U.	Journal of the Department of Letters of Calcutta University.
J.H.A.S.	Journal of the Hyderabad Archaeological Society.
J.H.G.S.	Journal of the Hyderabad Geological Survey.
J.I.A.I.	Journal of the Indian Art and Industry.
J.I.Anth.I.	Journal of the Indian Anthropological Institute.
J.I.S.I.	Journal of the Iron and Steel Institute.
J.M.S.B.	Journal of the Mythic Society of Bangalore.
J.R.A.I.	Journal of the Royal Anthropological Institute.
J.R.A.S.	Journal of the Royal Asiatic Society.
J.R.A.S.B.	Journal of the Royal Asiatic Society of Bengal.
J.R.S.A.	Journal of the Royal Society of Arts.
M.A.S.I.	Memoirs: Archaeological Survey of India.
M.G.S.I.	Memoirs: Geological Survey of India.
M.J.L.S.	Madras Journal of Literature and Science.
P.A.S.B.	Proceedings of the Asiatic Society of Bengal.
P.I.S.C.	Proceedings of the Indian Science Congress.
P.P.F.	Prehistoric and Protohistoric finds of the Raichur District, Man in India XV.135. Munn, L.
R.G.S.I.	Records of the Geological Survey of India.
T.G.S.B.	Transactions of the Geological Society of Bombay.
T.M.G.I.I.	Transactions of the Mining and Geological Institute of India.

T.R.I.A.

Transactions of the Royal Irish Academy.

W.A.S.

Washington Academy of Science.

THE DEVELOPMENT OF EARLY CULTURES
IN THE RAICHUR DISTRICT OF HYDERABAD

VOL. I.

EXPLORATIONS AND EXCAVATIONS

I N T R O D U C T I O N

I N T R O D U C T I O N

1. THE NEED FOR REGIONAL STUDIES AND RESEARCH IN INDIAN ARCHAEOLOGY

The development of archaeology and anthropology in India in the past century has served to emphasise the need for systematic research methods. In particular it was left to Richards, a thinker of great penetration, to formulate in two brief papers a rationale on which researches into man and his environment should proceed.¹ Of the various aspects that these papers covered, one in particular concerns our present purpose, that is the recognition of cultural regions in India. This aspect was later restated by Wheeler who recognized the need for a human geography based on the principles of Richards and elaborated on the familiar lines of Fox's 'Personality of Britain'.²

It is helpful to consider the approach of another worker in another field to the problem of human geography. Goodwin³ writes "In a continent such as ours (Africa) some sort of regioning is essential. It becomes abundantly clear that we have certain areas of attraction and plenty which have varied through the history of changing climate, and other areas of aridity and scarcity, which have, perhaps, been always as they are today..... In selecting our eventual regions all these factors will have to come into consideration: attraction, barrier, aridity, raw materials

2
sources of food and so on." These purely geographical factors have been analysed with great lucidity by Febvre⁴. and in understanding the relations of natural forces and human life this basis is perhaps the most satisfactory.

In modern India it is fashionable to emphasise cultural unity. Hindu revivalism has sought to propagate a new interpretation of the Sanātana dharma. Whatever this unity may mean its upholders tend to obscure the cultural diversity between not only north and south, but equally between east and west etc., and to do so fall back on a pseudo-history concocted in the main from texts of doubtful age, often edited and enlarged, whose historical significance has long ago been lost. In this process the very ground which nourished the ancient cultures of India, and which (as Krishna with almost unique insight realised - below p. 94 must contain the material relics of the glories reported in the Mahābhārata or Rāmāyan if these are more than fable, has been ignored. Thus the source for a right understanding of the cultural evolution of India has been neglected. A series of maps, climatic, orographic, vegetational etc. shows a series of variations in space more or less linked to definable human variations (population, language etc.). Richards showed that in India these variations were also consistent with historical and archaeological facts, and thus that cultural regions could be defined. If the archaeological cultures of India are examined in terms of such regions it should be possible to determine how far there do exist inter-regional traits and to estimate their significance in

3

in defining inter-regional cultures.

Discussing the practical organization of regional studies in Africa, Goodwin⁵ writes, "It is the localised survey that should provide the background of our science in the future, and central authorities must be content to make use of such surveys, and at the same time to take into account the needs of the local worker. Material which is essential locally for purposes of comparison, study and analysis must be kept locally available." This consideration is as important in India as in Africa. It is strange that the main sources of this type of work in India have been outside the Archaeological Survey and in particular have emanated from Universities and private individuals. Of the latter we may note Richards' own work 'Cultural Geography of the Wynaad'⁶ and Foote's 'Geology of the Bellary District'⁷ as pioneer examples. More recently the Deccan College, Poonah, has set an excellent example: Sankalia's 'Prehistoric Archaeology of Gujerat' and 'Studies in the Historical and Cultural Geography and Ethnography of Gujerat' were followed by Subba Rao's brilliant thesis on Bellary of which a part has been published.⁸ This work is the best regional study so far written in the Indian field. The contribution of London University to this field of studies is not small. In the twenty years since Sankalia's thesis on the Archaeology of Gujerat, a number of contributions to regional archaeology has appeared.

The most recent of these is Seshadri's thesis: Prehistoric and Protohistoric Stone Industries of Mysore, a work which includes some material on other aspects of culture than the stone industries. Another recent work, Subba Rao's 'Baroda Through the Ages', attempts to include every aspect of archaeology of the region chosen, and amply fulfills the promise of the earlier work.⁹.

The present work is based upon research done in one district of the (north) Kannada region. It thus forms a natural complement to Subba Rao's work in Bellary (the centre of the region) and Seshadri's in Mysore (the south). The Raichur district was chosen for two reasons, first that with Bellary it appeared to offer a greater concentration of sites than the neighbouring districts, whilst a considerable amount of exploratory work had been already completed, and second that it was hoped to provide a critical comparison with Subba Rao's conclusions at the same time as widening the evidence both in space and detail for the understanding of the cultural geography of the region. The comparative analysis of the three works has still to be made. Subba Rao likened the region to a Provincial state within a national state, but it appears to us more truly to comprise a loosely knit group of 'principalities' sometimes attracted to one, sometimes another, political grouping, and yet linked throughout by common cultural ties. How far this is true of central and southern Mysore is not yet clear, for it will be shown that this area is culturally distinct

from Bellary-Raichur.

2. THE PLAN OF THE PRESENT WORK.

The present work is the result of 5 months of exploration and one month of excavation in Raichur. Surface collections of stone implements and pottery were made at all productive sites. The plan of the report on this field work is as follows.

Vol. I. An introduction including a full terminology of general archaeological and technical words used in the analysis of graves, pottery, stone and metal industries. Chapter I contains a geographical introduction to Raichur district and its place in the Peninsula of India and the Kannada region. The distinctness of the northern and southern parts of the region is shown, and the human geography of the northern part is traced.

Chapter II contains brief notice of the results of previous research in Raichur district, and a summary of the results of research outside the district bearing directly upon the culture sequence of Raichur.

Chapter III contains a detailed account of the present writer's explorations in Raichur district including 26 sites not previously reported. An appendix to the chapter analyses the grave types of Raichur and their external affinities.

Chapter IV contains a short account of excavations carried out by the writer with the assistance of members of the

6
Hyderabad Archaeological Department at Piklihal near Mudgal. Chapter V contains an exhaustive analysis of the pottery of the district from earliest times to Medieval. The analysis is in two parts: Technological and Morphological and under the latter heading the functions and comparative study of the pottery are included.

Vol. II attempts a critical analysis of the culture sequence revealed in the first volume.

Chapter VI contains an outline survey of the cultural history of the peninsula in which an attempt is made to inter-relate archaeological, historical and external evidence and to provide a context for the following chapters.

Chapter VII contains an analysis of the Neolithic A and B cultures of Raichur and of their extent. This chapter suggests that the people were predominantly pastoralist tribes, though cultivating millet and practising small scale horticulture. The stone technology is discussed. An appendix to the chapter summarises the evidence available on the problem of the 'ash mounds' and proposes a new explanation of their origin, whilst fortifying recent conclusions as to their dating.

Chapter VIII analyses the post-neolithic culture. It proposes a new approach to the southern iron industry which is discussed in detail from technological and comparative standpoints. A later section contains a summary of evidence on the burial types of the southern grave complex and finds close apparent affinities for these types in

southern Arabia. An appendix to the chapter contains the first detailed study of the stone alignments of Raichur and the neighbouring districts. It lists all specimens so far reported and suggests their possible significance.

Chapter IX analyses the pre-medieval A and B cultures. It finds that this period witnessed the full development of the pattern of rural settlement in the district. Technological advances are discussed, as are the trade and routes which now developed with other regions.

Chapter X sketches some aspects of the medieval culture, and deals with possible survivals of burial customs.

Chapter XI briefly summarises the evidence for dating the cultures and attempts to compare the culture sequence with that of other regions.

Vol. III includes maps, site plans made by the writer during field exploration, drawings of selected stone artifacts and pottery, and photographs taken in the field. It further includes a catalogue of selected pottery, terracottas and stone artifacts.

3. TERMINOLOGY.

A. General. Certain key terms have come to have widely separate meanings in the sister studies of archaeology, anthropology and sociology. Among them we may note particularly "society", "culture" and "civilization". As

As these terms are all used in this work, and as the usage here adopted often varies considerably from current archaeological let alone anthropological usage, it appears necessary to define them. I have been guided by my desire to adopt only those meanings which are sufficiently general to be applied to all three studies, as the branches of a general anthropology.

The data collected requires analysis, and cultures and societies appear to be convenient units. A society is defined as the state of living in association with others of the same species; the system or mode of life adopted by a body of individuals etc.¹⁰. The term "culture" in its modern technical sense was skillfully defined by Tylor¹¹. as an adaptation of Klemm's 'Kulturgeschichte'. For archaeologists the data available (particularly for the study of a pre-literate society) are mainly non-literate, and the term "material culture" is convenient in this context. We should like to define the culture of a given society as ideal the sum total (but practically the maximum available at the time of study) of the physical and mental activities of, and objects acquired or produced by, the members of that society during a given period of time.

Archaeology is the historical branch of anthropology and thus has mainly to analyse the evolution of human societies and institutions and man's technological control of his environment. We shall follow Morgan¹² in his broad

classification of the major stages of social evolution and the criteria which characterise them. Childe has recently demonstrated the value of this classification in the analysis of archaeological data.¹³

Thus:-

Savagery is used for all those societies in which there is no food production (i.e., the basis of subsistence is collecting and hunting).

Barbarism for those societies in which a form of food production is practised (e.g., the rearing of animals for food, the cultivation of edible plants etc.) but which cannot be classed as civilized.

Civilization for those societies in which writing is practised. Archaeologically this criterion appears throughout the world to be related to the necessary technical advances and specializations that underlie city life.

These stages and the criteria that govern them are here used only in general, they are not universal. They need not imply (as Lowie assumes)¹⁴ adherence to ^a theory of unilinear evolution, for whenever a further stage is reached the previous ones will appear in various combinations with ~~an~~ relationships to it. These relationships are the distinguishing features of the primary and secondary stages of cultures recognized by Tylor.¹⁵

We may now quote a few examples from India to show this terminology in action. We shall refer to the Neolithic culture of Raichur or of the North Kannada region

but not to a "copper-hoard culture". Such jungle tribes as the Veddas of Ceylon who live entirely by hunting and collecting may be said to be in the stage of savagery but they will not be referred to as a "bamboo civilization". The Aryan tribes who entered N.W. India were probably bronze-using pastoral nomads. There is no evidence for their use of writing, and ~~they~~ may be assigned to barbarism but not to a "Vedic civilization". This is also true of the neolithic pastoralists and agriculturalists of the Deccan whose culture appears to have survived intact for centuries after the Mauryan intrusion. The Indus Valley city culture, having the use of writing, is assigned to Civilization, as ~~is~~ the Ganges Valley city culture of the early centuries B.C. in which the use of writing (not yet archaeologically attested before Asoka) developed.

B. Technical.

1. Terms for the Culture Sequence and Chronology. The sequence is based upon a synthesis of the results of exploration and excavation in Raichur and adjoining districts. At Brahmagiri Wheeler named the cultures: Stone Axe Culture IA and B, Megalithic and Andhra.¹⁶ The present writer has preferred to adopt the following:- Neolithic A and B, Post-Neolithic, Pre-Medieval A and B, Medieval.

Neolithic A. corresponds generally with Wheeler's Ia. In abandoning Wheeler's term I have had to bear in mind the

weighty arguments of Seshadri¹⁷ regarding it. I have been prompted by two over-riding considerations, general and local. The term 'Neolithic' was coined by Lubbock¹⁸ to describe the age of polished stone implements. Both the term and the technological criterion it involved have since become identified with a far more basic change in human life which may be connected with "food-production" and the "neolithic revolution" it entailed.¹⁹ Sociologically it seems wedded to Morgan's lower stage of Barbarism. The Raichur culture concerned appears to meet all these requirements: technologically it is based upon stone blade and polished stone industries, it appears as the first food-producing culture in the area (albeit at a relatively late date in absolute time), the small scale agriculture and the pastoralism together with the scant metals and the very limited magnitude of the sites coincide with Morgan's lower barbarism. Local considerations are of a different sort. As early as 1895 Foote used the term 'Neolithic' in referring to the polished stone industry of Bellary.²⁰ In his later writing he clearly recognized the distinctive pottery of the culture²¹ and many of the sites. He also realised that the microlithic artifacts were of the culture. Sewell not only used the terms in his writings but made a collection of 'neolithic' pottery in the Bellary hills. The present writer has examined this pottery and finds that every specimen conforms with the Raichur A wares. Mitra followed Foote in his definition

of the neolithic cultures of S. India.²² The publications of H.A.D. clearly refer to the stone industries and pottery of the culture as 'neolithic' (above p.84). Such consistent usage amply justifies the adoption of the term.

Neolithic B. is suggested by slight changes in the frequency of pottery types and radical changes in the type of occupation at Piklihal. It also appears to correspond with the introduction of limited copper and bronze working. The technological basis of the culture is stone, and for this reason Lal's proposed "chalcolithic" has not been followed, although further evidence may necessitate a modification of this view. (See below p.373).

Post-Neolithic. This corresponds generally with Wheeler's Megalithic culture. Wheeler's term was abandoned because burial customs (even if they can be linked with great stones) form a minor part of the life of any human society. Further the unfortunate overtones of the term, so powerful in the writings of Diffusionists, are not yet without force. Foote adopted the terms 'Iron period' or 'Iron Age', whilst Munn used 'Early Iron Age'. Although these terms are less objectionable than the other, they are not wholly satisfactory. Whilst recognizing the technological base of the society, they none of them have a wider signification of the sort associated with 'Neolithic'. They further fail completely to reveal the exact technological parallel of the period with the subsequent ones. With this in mind, and considering that the culture largely overlaps with the

13

Neolithic B (with which it shares many common pottery forms) and that it does appear to mark the bridge period leading from the neolithic to the early historic period, I have coined the new term Post-Neolithic. This term is primarily chronological, and does in fact suggest the close evolutionary link with the neolithic that a study of the two cultures warrants.

Pre-Medieval A. corresponds generally with Wheeler's Andhra culture. This term was, however, abandoned for two strong reasons. The culture in Raichur although sharing certain pottery types with the Andhra sites of Amarāvati and Kondapur, had in every way closer cultural affinities with the south, as exemplified by Arikamedu, than the northern Deccan. The same objection was found to pertain to Wheeler's Andhra painted ware which occurs at Kondapur as a rarity and is not yet once reported at Paithan. The second objection to the term is that Andhra rule in the district appears, in the wider context of cultural change in the Peninsula, as a part of a far greater and more fundamental stage in its evolution and as one which does in fact set the pattern of medieval and modern life. For this reason I adopted the term Pre-Medieval as primarily chronological but also suggestive of the cultural breadth of the period.

Pre-Medieval B. In the course of this work I have come to realise that the time of confusion and petty dynastic rule which superceded the breakdown of inter-provincial

Sātavāhana rule in the early decades of the 3rd century A.D., and lead to the establishment of the local Ikṣvāku, Chūṭu, Pallava and Kadamba dynasties,²³ marks the beginning of a period of cultural stagnation in the district which lasted for several centuries. In terms of the pottery (which constitutes the major group of objects collected in the district and assignable to the period) the link is with the preceding period and the essential cultural break is with the succeeding. Certain typical examples of this pottery were included as 'late Andhra' by Wheeler, but as the Andhra rule must long have ceased, this was inappropriate. The term 'Medieval A' would have been appropriate had I not already named the following culture Medieval. In this circumstance the term 'Pre-Medieval B' was adopted as suggesting the link with the preceding period.

Medieval. The end of Chalukya rule and of the Kadamba dynasty corresponds roughly with the Ghori advances into India. (c.1180 A.D.) The two buffer states of the Yādavas and Kākatīyas collapsed in the first quarter of the 14th century, and Raichur became a no-man's land peripheral on the Bahmani kingdom and later Muslim states of the Deccan and the Vijayanagara empire. This period of raids and forts marks the beginning of a new culture. The pottery changes radically and its affinities are now with the northern Deccan. The term 'Muslim' has much to recommend it, but as it is singularly inappropriate in the context of Vijayanagara, I adopted Medieval.

2. Terms relating to Pottery Sequence.

A detailed study of the pottery sequence from the viewpoints of technology and morphology is given in Chapter V. Analysis ~~of the~~ revealed four great divisions of ware. These are partly sequence divisions but are inescapably linked with the technology. Each division is distinguished by a letter A, B, C, or D. This it is generally true that the A ware includes all specimens of pottery ascribable to the Neolithic Culture, whilst D includes all specimens of Medieval - Modern pottery. The B wares include those of the Post-Neolithic and Pre-Medieval A and B cultures, as becomes clear in the following table. The C wares are those imported to the district and therefore foreign luxury goods. Each ware has been further analysed and sub-divided in a convenient manner. Thus B1 ware, corresponds with Wheeler's 'Megalithic' and B2 with Wheeler's 'Andhra Painted'. For the sake of clarity a short table summarising the wares is given below:

Ware	Culture	Sequence	Short Description	Notes.
A1	Neolithic	A & B	Coarse grey, black or buff ware.	Hand-made
2	"	A & B	Burnished grey, black or buff ware.	Sometimes painted - post-firing
3	"	A & B	Slipped & burnished red, black, chocolate, buff ware.	Ditto
4	"	?B only.	Buff & Red slipped ware with post-firing paint.	Wheel-thrown, persists Post-Neo.
5	"	?B only.	Slipped & burnished olive green-cream-grey & black surfaced ware.	Found only in B.

Contd.

Table Contd.

Ware	Culture Sequence	Short Description	Notes.
B 1	Post-Neolithic - Pre-Medieval A.	Red-and-Black slipped & burnished ware (varieties in chocolate and grey))	Wheel-thrown; predominates in earlier period.
2	Pre-Medieval A	Similar ware with white painting & russet overslip applied before firing.	Ditto.
3	Post-Neolithic - Pre-Medieval B	Red or Black slipped ware, rarely burnished.	Predominantly Red in Pre-Medieval A.
4	Ditto	Unslipped, unburnished ware.	(Pinched cup forms typical)
5	Pre-Medieval	Unslipped, unburnished coarse grey ware.	(Storage jars & industrial)
C 1	Intrusive Wares (not locally assigned)	"N.B.P." fine clay, dressed ? (glazed) ware.	Specimens found as surface finds at Brahmagiri.
2	Pre-Medieval A	"Rouletted ware"	
3	" " "	"Red Polished ware" with fine clay.	
D 1	Medieval & Modern	Unburnished grey or buff ware.	Limited range of forms.

The forms of pots are closely linked with their ware. Thus the form number of a neolithic pot is prefixed by the sign A/ (i.e. A/5). An identical form may occur in two different wares: it then has two distinct form numbers (i.e., A/1 and B/27). Sub-divisions of a form are marked by a small letter after the number (i.e., A/5b). In addition each specimen illustrated (and a few interesting

specimens not illustrated) have been catalogued and given a catalogue number. This comprises the site number followed by the sequence number in the catalogue. Thus 47.51 is specimen number 51 from Maski.

3. Terminology of Graves and 'Megalithic' Monuments of Raichur. The surface survey of graves is an unsatisfactory means of reaching a suitable terminology for classifying them. From the many sites so far excavated in S. India it appears that there are fundamentally two types of burial chamber involved: Urn burial, running into pottery cist and sarcophagus; Cist burial, either on the surface of the rock or buried in a deeper or shallower pit.

A third type of grave as yet not sufficiently excavated is the pit without cist, and sometimes without any major deposit of bones. This type is discussed by Wheeler on the evidence of the excavations at Brahmagiri.²⁴ Wheeler concludes that the pit was for the purpose of exposing bodies prior to final interment. This view and possible amplification of it are given in Chapter VIII.

It is clear, however, that surface observations can rarely reveal the burial types, and may therefore tend to be misleading if sub-division is carried too far. The division of graves has for this reason been limited in the main to types that seem to indicate local, geographical, distinctness and cannot be used to infer the unseen presence of cist, urn or pit, unless some peculiar evidence

supports it. For this reason we have attempted to minimize the use of special terms of the sort that are liable to confuse the description of the graves, and use in general simple, descriptive terms that are self-evident. This list follows as far as possible the terms now used by the Department of Archaeology and given as Appendix B to Krishnaswami's Megalithic Types of South India.²⁵

1. Alignment. A series of standing-stones or boulders arranged in lines on some definite system.

2. Cairn. A mound of heaped-up stone rubble, chips or pebbles.

3. Cist. A sepulchral chest or chamber. May include several varieties: rock-cut cist - a chamber excavated in rock as in the circular, domed cists of Malabar: pottery-cist - including terracotta sarcophagi and urns, with or without feet or legs: stone cist - a box built of stone slabs, usually with capstone or cover and sometimes with floor stones, sometimes below the ground level or sometimes above and constructed on bedrock; usually the walls consist of single orthostats often with svastika or card-house plan. There are a number of sub-varieties of the stonecist. These include the elongated or coffin cist - the length of one side is less than 4' and of another 8' or more. The single, double, treble, etc. elongated cist for a series of coffin cists side by side with common dividing walls on the long axis. Compartmented cist - when the cist is divided

into compartments of squarish plan. The porthole cist - when one wall, often orientated, has a circular or angular opening cut into it. The degenerate cist - when a cover slab and floor slab are divided by four pillars of granite blocks or walls of granite blocks. The pinnacled cist has the orthostats on the long axis pinnacled to form a gable.

From the point of view of size, cists are small if up to 3 feet in internal length, or large if over 3 feet. Elongated when the long axis is more than twice the length of the short.

4. Standing-stone. A single stone set upright in the ground, upon its long axis.

5. Stone circle. A circle of stones. These may be further divided: single, double, or treble circle, according to the number of concentric circles. Circles of standing stones, of boulders and of roughly hewn stones. Degenerate circles often of squarish or oval plan. Stone circles with ash or kankar scatter.

From the point of view of size circles may be classed as small up to 12' in diameter (this group appears to include most of the degenerate circles of Raichur), common circles of diameter 12'-36' (this includes the vast majority of those in the District), and large 36'-120' diameter. (The large stone circles mark a peculiar type of monument and are uncommon).

In addition to these major terms there are two sets

of minor ones to be noted:

6. Entrance. An opening between two slabs forming one wall of a stone cist. Entrance passage - a passage between two slabs leading to the entrance or porthole of a cist (Munn uses the term antechamber for this detail). Entrance Ramp or way - an excavated ramp leading down to a pit or subterranean cist. Entrance Court - a stone enclosure leading to the entrance of a cist.

7. Enclosure. A line of stones surrounding any monument or forming a definite geometric shape. Enclosure wall - a wall serving this purpose.

The term "Megalithic" has occasionally been used for any of the group of related stone monuments described above. It is not used to describe the pottery or material culture of the people who built the monuments. "Megalithic" is generally placed in quotation marks to indicate its use in the current meaning of the term. The whole range of graves of the area, and particularly those of the post-neolithic and pre-medieval periods has been named the Southern Grave Complex, following Codrington, or Southern Burial Complex. This name seems to describe the graves adequately, whilst bearing none of the undesirable overtones of the term "Megalithic".

4. Terms relating to Stone Industries and Artifacts.

Neolith is used for a flaked and polished or part-polished tool, or pecked tool of a variety of forms (which

are named when possible from the probable function of the tool concerned, e.g., axe, pick etc.). In Raichur these tools are nearly all made from a variety of schists or basic trap dyke rocks. The term may be used synonymously with polished stone axe, pecked stone axe, etc., and occasionally 'pointed butt stone axe' (Wheeler). These neoliths are nearly always core tools.

Microolith is used for a variety of tools made from a wide range of silicates found in Raichur. They include blades of generally less than 1" in length, and either complete with bulb of percussion and distal end or with either one or both of these sections removed, and geometrics often made from blades, comprising a variety of forms, found in association with the blades in excavation and at factory sites. The geometrics are also found in and on flakes of quartz that are highly unsuitable for blade manufacture (as at Bandarawela in Ceylon). The geometrics have been referred to by Seshadri²⁶ as "hunting microliths" as opposed to the mainly blade "urban type" microliths. How far these terms are justified in Raichur is a matter of some doubt, and they have therefore been used very rarely and in inverted commas. The microliths of the blade type were made from distinctively prepared cores, and numbers of spent cores are a common feature at sites producing microliths.

Flake Tool is used for large flakes of the same materials as the microliths but of greater size (e.g., the blades from the Piklihal Site VIIIA burial), or flakes of the raw material of the neoliths. The latter are considered as being mainly by-products in the manufacturing process of neoliths, but they bear use marks and therefore deserve notice as independent tools. It must be stated that there is a certain number of artifacts in both these categories that are technically blades.

5. Terms defining stone or metal tools.

These terms are as far as possible indicative of the function of the tools, and have followed when possible those used by Petrie in Tools and Weapons, thus:

Axe A tool intended to be hafted with edge parallel to the blade, with equal faces and edge; to drive into and split wood. Its main varieties (in Raichur and S. India) are the flat cross-banded iron axe and the socketted axe. Developing from the first are scolloped ceremonial axes (iron). Other axes occur in stone, copper, and bronze.

Adze A tool hafted with edge across the handle, generally bound to haft, with one face longer than the other and ground on one side; to take thin slip of wood off a larger mass.

Pick for rock splitting and soil breaking. The S. Indian

example is flanged.

Hoe for horticultural uses is a variety of adze. The iron specimens are generally flanged. The stone must have been mounted by binding.

Chisel, cold-chisel and wedge. For splitting wood, and rock. The stone chisel is a specialised form of axe, whilst the copper plain chisel has a rectangular section.

Knife. A cutting tool. Notably absent among neoliths, its place must have been taken by the microliths. The iron knife is generally a single cutting edge tool. No distinction can be made between tools and weapons.

Sword. South Indian Iron swords appear to be all straight or leaf-shaped straight-bladed. Some are tanged and others have iron handles. Absent in stone.

Dagger. Both iron tang-handled and solid or looped-handled occur. Absent in stone in Raichur.

Spear-head. S. Indian iron spear-heads are usually hollow with straight or curved sides. Tanged forms occur. A variety is the lance with squared section and hollow stem.

Arrow-head. Several stone artifacts could have been used as arrow-heads. Seshadri ²⁷ mentions assymetrical points in this connection. Some geometric forms could also have been used, as suggested by Leakey. Iron

forms are usually flat bladed tanged or socketted.

Sickle. In modern usage is applied only to a wavy edged tool intended to cut a large quantity of stalks by a sawing motion. Microlithic sickles may well have been made of the type found in Palestine, and hafted in either bone or wood.²⁸ Similar sickles are widely known in Egypt and the Middle East. The S. Indian iron examples are mostly semicircular and tanged.

Bill-hook is "intended to cut by a blow, struck at only one or two stems of firmer growth". There is not the sawing motion that the curved sickle blade implies. Iron examples are tanged, often with curved end. The blade is mainly straight as is the scythe blade.

Agricultural tools. Developing from the simple hoe and digging spud a number of iron tools occurs. They range from flanged and triangulate pointed tools, (?) plough shares, to long rounded bladed flanged (?) shovels.

6. Other Technological terms:

Industry. An assemblage of artifacts from a given area and interval of time which appear to be the products of "systematic work or labour"²⁹ and which demonstrate by their technological features that they are the products of a single craft tradition, are referred to

as the products of the given industry. This definition is to be compared with Burkitt³⁰ whose definition of "industry" is in no way comparable with modern common usage, and is not used in this work.

INTRODUCTION: NOTES AND REFERENCES

1. Richards, F.J. J.M.S.B., 1917; Ind. Ant. 1932, 3 etc.
2. Wheeler, M. A.I, 2, 1946 and A.I, 5, 1949. "Planning Ahead"
3. Goodwin, A.J.H. The Loom of Prehistory, 1946 pp.11-13.
4. Febvre, L. A Geographical Introduction to History 1925.
5. Goodwin, loc. cit. p.40.
6. Richards F.J. Ind. Ant. 1932.
7. M.G.S.I. XXV. 1892.
8. Subba Rao, B. Stone Age Cultures of Bellary, 1948.
9. Subba Rao, B. Baroda Through the Ages. 1953.
10. S.O.E.D. 1947. Society, I.2.
11. Tylor, E.B. Primitive Culture, 1871, p.1.
12. Morgan, L.H. Ancient Society, 1877 pp. 9-18.
13. Childe, V.G. Social Evolution, 1951.
14. Lowie, R.H. Primitive Society, 1921 Ch. XV.
15. Tylor, loc. cit. Ch.II.
16. A.I.4, 1947-8. p.222.
17. Seshadri, M. Prehistoric & Protohistoric Stone Industries of Mysore 1952. pp.1045
18. Lubbock, J. Prehistoric Times, 1865 pp.2-3.
19. Childe V.G. loc.cit. p.22,
" " Man Makes Himself, 1936 Ch.V.
20. Foote, H.B. M.G.S.I.,XXV,1892.
21. " " I.P.P.A. 1914.
22. Mitra, P. Prehistoric India, 1927 Chs. IX,X and XV.
23. Sircar, D.C. Successors of the Sātavāhanas, 1939.
Krishna Rao, B.V.Early History of Andhra desa, 1942 etc.

24. A.I. 4, 1947-8 pp.194-7.
25. A.I. 5, 1949. pp. 43-4.
26. Seshadri, loc:cit. p.90 and p.103.
27. " loc. cit.
28. Garrod, D. & Bate The Stone Age of Mount Carmel, Vol. I,
Pl. XIII.1.
29. S.O.E.D. 1947 Industry 4.
30. Burkitt, M.C. The Old Stone Age, 1933 p.11.

C H A P T E R I .

THE GEOGRAPHY OF THE PENINSULA OF INDIA: ITS
REGIONS AND ZONES. THE PLACE OF RAICHUR DISTRICT
AND ITS HUMAN GEOGRAPHY.

CHAPTER I.

THE GEOGRAPHY OF THE PENINSULA OF INDIA: ITS REGIONS AND ZONES. THE PLACE OF RAICHUR DISTRICT AND ITS HUMAN GEOGRAPHY

The sub-continent of India may be divided roughly into two halves. The northern half contains three major divisions which were outlined by Richards¹ as the Indus Basin, the Ganges Basin and the central belt of hills and desert. Its southern boundary follows the Narbada river from the west, but also includes the much prized Gujarat coast. In the east it passes south of the forest belt, which still contains a series of jungle tribes, includes the rich rice-fields of the Orissan littoral strip as far as the Chilka lake. The southern half is the peninsula proper and, as Richards points out, it may most conveniently be divided into five main cultural regions following the modern linguistic frontiers. These are the Marathi, Kannada, Telegu, Tamil and Malayabam regions, and they generally correspond to the areas known to modern vernacular writers as Mahārāstra, Karnāta, Andhra, Drāvida and Kerala. (Pl. 3a).

The peninsula may also be divided geographically into coastal and upland zones. From this point of view the Marathi and Kannada regions comprise the centre of the uplands whilst the Malayabam, Tamil and Telegu regions contain the population centres of the coasts (Pl. 3b). The two

latter linguistic regions do, however, include a hinterland of sparsely populated hill tracts which belong rather to the upland zone, but often form refuge areas to tribal peoples and thus act rather as buffers between the two main zones. We shall refer to the upland zone as the Deccan Plateau and to the litoral as the Tamil plain, western coastal strip and Andhra coast.

Richards recognized three factors as conditioning human existence.² These were configuration, climate and economic products. He suggested that among all the variable (human) factors population density might represent a "common multiple". In India, this does in fact appear to be the case (Pl. 3b), and so before we turn to the Deccan Plateau (on which Raichur district lies) we shall do well to consider the distinguishing features of the densely populated coasts.

The geography of the litoral zone is distinguished by the broad alluvial plains bounded in the west by sand dunes and lagoons, and overlying for the most part archaean rocks. A considerable area is covered by laterite of recent formation. The rainfall of almost the entire zone is above 30" p.a., and of the present centres of population it is above 40", whilst in the west it exceeds 100". In the Tamil plain the effect of both monsoons is felt and the rainfall is thus distributed in a manner that is unique in India. These conditions make possible the large scale

use of irrigation by tank, well and canal (sometimes connected to an anicut^{3.}), and in the coastal region about 65% of the land is cultivated. Rice is the main crop, but wherever the rainfall falls below 40" millets and other cereals (cholan, sorghum vulgare, and kambu, pennisetum typhoideum etc) occur (Pl.4). The coconut palm is an important feature of the western strip as are the gardens of areca, betel-nut and black pepper for which this area has long been famous. The slopes of the western ghats are densely covered with tropical rain-forest. The mean temperature variation between January and July is less than 1° in Trivandrum and as little as 12° in Madras. Very few parts of the entire zone rise above 500' (Pl.1a).^{4.} We may conclude that the configuration and climate of the zone combine to make possible the density of population and thus that the area is one of attraction.

Inland from the ^olitral zone lies the Deccan Plateau - the upland zone. This area is bounded on the west by the heights of the Western Ghats and on the north by the hill forests of the Godavari and Penganga river valleys, whilst to the east lie the lower Godavari and the hills of the Eastern Ghats, and to the south the line of the plateau breaking into the plains through the area described by Richards as the "Polygar belt".

The territory thus described lies well below the altitude of the ghats, 3000' and in its eastern extremities

drops to about 500' above sea level. The whole land mass thus slopes away to the east. The rainfall of the area varies from 20" to 30" annually in the west and centre and rises towards 40" to the north-east and south, whilst there is a sharp curve of increase towards the ghats. The greatest part of the rain is brought by the N.E. monsoon, and the area must be regarded as arid for much of the year. The question, however, whether the climate in prehistoric times witnessed a more abundant rainfall is legitimate and will be discussed below (p. 269). The temperature in the shade, at plateau level, reaches a summer maximum of 120°f., whilst the winter night temperature averages about 60°f. These factors are fairly constant throughout the zone.

The plateau may be divided into two regions, the northern, Marathi region, corresponding to the area of the Deccan trap rock and the southern, the Kannada region, to that of Archaean rocks.

The details of the topography of the plateau derive directly from the geological formations and, when, rainfall and temperature are generally similar, form an interesting expression of it. Indeed it may be argued that the archaeology and more recent history of the whole of the peninsula are closely related to this expression, and thus make a most impressive field for the study of human geography. The area is roughly divided by a line running diagonally from north-east to south-west. To the north of this line lies the Deccan trap country, whilst to the south the pen-

insular gneissic complex, of which Raichur is at the north-west angle. As though sealing the plateau from the north (excluding west) and east (excluding south) lies a third distinct series of the Purana and Gondwana rocks, whilst in the centre and south there lies a fourth system of rocks, the Dharwars, which interlies the gneissic rocks. The first of these zones is peripheral. The second lies immediately north of the area of study and two last groups of Archaean rocks present uniform archaeological and geographical features.⁵

1. The Purana and Gondwana border lies to the north and east. Its negative or limiting influence on human geography deserves notice. The sedimentary rocks consist of limestones, sandstones and shales. The first two tend to form flat plateaux often terminating abruptly in steep escarpments, giving way to valleys of shales. These are shallow plains with little variety of surface features. They do not contain any minerals that were sought after by primitive man, but produce a poor sandy soil with expanses of bare rock which can support only a thin timber forest, with few bamboos and scrub. A variety of trees flourish including the mohwa (*bassia latifolia*), sisam (*dalbergia latifolia*) and teak (*tectona grandis*). The sandy soil does not favour agriculture. It is, therefore, quite natural that this zone, together with the forests on the gneissic rocks that lie beyond it, should be inhabited by

a variety of primitive tribes, some of whom practise a simple form of agriculture - often in the alluvium of water courses - and who, by virtue of the tools at their disposal, have been unable to clear the more fertile lands for agriculture (in the same way prehistoric man in Europe chose the downlands as opposed to more densely forested lowlands).^{6.} Further the thin bush favours the hunting of animals of all types. The way of life of these tribes has been illustrated in its varying degrees of development in recent anthropological studies.^{7.} Whilst many of these tribes at present speak Dravidian dialects, certain (particularly in the north) have retained varieties of Munda languages. The Savara (Saora), Juang and Santals to the east, and Kurku to the west in the Mahadev hills are Munda speaking tribes.^{8.}

To the east again of the zone lies the irregular line of the Eastern Ghats closing the region to the coastal strip. These ghats are pierced by the valleys of the Godavari and Krishna rivers, a region which contains the ancient trade routes that link the coast and upland zones and still provides the only direct rail links with the west coast south of Calcutta.

In the west of the plateau there is a series of residual hills of the Kaladgi limestones. Lying within a few miles of the ghats they are lightly wooded (having a moderate rainfall) and as Despande^{9.} points out must have offered an admirable situation for the Early Chalukyan rulers of Badami

being both easily defended and strategically placed for the rich adjoining agricultural lands. There does not appear, however, to be evidence for any intense occupation of the area in prehistoric times, although one group of cist graves is reported from it.¹⁰.

2. The Deccan Trap Region. The trap lavas form a distinct area of human habitation. The word trap derives from a Swedish original 'trappe' meaning 'step', and the stepped effect dominates the modern landscape. It is thought that these lavas welled up quietly from fissures in the earth's surface and immediately spread out in layers of a remarkable evenness.¹¹ Geologically the trap is Upper Cretaceous or Eocene in age as compared to the older Jurassic and Triassic Gondwanas, and Algonkian Puranas. It is believed that its origin is associated with the break-up of the Gondwana system.¹².

The resulting rock formation derives from the quality of the lava of each flow being spongy and softer in its upper levels, whilst the lower sections are harder. The rocks contain pockets technically termed amygdules (from their almond shape) which are filled with deposits of various minerals as a result of water infiltration. These deposits include varieties of chalcedony 'jasper, agate, carnelian and onyx) and crystalline quartz. They form one of the sources for the raw materials of microliths. In a number of places intertrappean rocks have formed in the

intervals between the outpouring of the lava, as the result of sedimentary deposits. These are often fossiliferous and thus provide valuable evidence for the age of deposits.^{13.} They occur in the form of greenish or black chert, and a grey cherty limestone.

The surface features of the trap country are typical of basaltic lavas wherever they occur. The horizontal layers of rock of varying degrees of softness have weathered into a series of steps of long vertical tables divided by valleys giving way to gently undulating plains. The higher plateaux are often remarkable for the close similarity of levels even when considerable distances intervene. The country supports few trees in a wild condition, excepting rare babul (*acacia arabica*). Larger trees grow usually only in the vicinity of villages, where the typical N. Indian varieties may be found: mango, nim, tamarind, banyan etc. The date palm occurs near watercourses. In the forest country of Adilabad district, where the rainfall is somewhat higher, a denser jungle does exist and teak and bamboo flourish. The soil which results from the weathering and decomposition of the lava is the celebrated 'black cotton soil' which often reaches considerable depth, and is highly fertile. Its quality of retaining moisture combined with the 'porous' nature of the trap rock makes the water table within easy reach of wells.

The trap country corresponds closely with the southern extension of the Indo-Aryan languages, and from its borders southwards the Dravidian dialects predominate. The people of the region following the nature of the soil practise dry cultivation, depending mainly on absorbed rainfall outside the limits of well cultivation and garden crops. The fertility of the soil must have been already exploited when the author of the Periplus noticed the fact that Tagara was famous for its cotton cloths and muslins.^{14.} The gentle undulation of the plains, combining with the faults and fissures of the rock and particularly with its permiable nature, makes dams rarely practicable, and surface drainage tanks are therefore very rare. This fact accentuates the distinctness of the region. The considerable labour of well-digging is often regarded as a matter in which several villages collaborate. It is probable that this fact accounts in part for the sparse evidence of prehistoric occupation of the area, and for the fact that many ancient settlements lie on perennial streams.

The more easterly region gets the benefit of both monsoons, whilst the trap country, in common with the Raichur district receives the slight effects of the S.W. monsoon only, attenuated further by the rainshadow of the Western Ghats. Only along the westmost strip of the region does the rainfall increase steadily, and give rise to a more wooded landscape. This part of the Deccan is

almost entirely peopled by Marathi speakers, and only further beyond the Tapti river do dialects of Rajasthani and western Hindi occur. There are some indications that the Kannada language originally extended northwards into the area.

3. The Peninsula Gneissic Complex. As has already been mentioned the rocks of this system extend southwards over the whole of the foot of the peninsula. Their northern boundary forms the limit of the Dravidian languages. The rocks are Archaean in origin, they are all igneous and in the northern sections are rather granites than gneisses. The exact relationship of these two rocks is by no means decided. But some at least of the gneisses are probably metamorphosed granites. A number of minerals and precious stones are found throughout the region, and those found in Raichur will be mentioned below. The sequence of formation of the several elements of the complex is a matter of dispute, and outside the scope of this work. Their variation is, however, of some importance from a topographical point of view, as a marked difference in the resulting landscape can be observed. In general, the granites present a monotonous peneplain broken at intervals by little hillocks of rocks or boulders and occasional ranges of hills. Characteristic are the stepped and jointed boulders popularly familiar in England as 'Druids Quoits' etc., and in India associated with Hanumān and the

monkey helpers of Rām. One of the fundamental factors of the human geography of the region is that the natural valleys and hollows may be, and were anciently, dammed to form irrigation tanks, whilst the impervious nature of the subsoil and underlying rocks favours water storage. Within or below these tanks a rich alluvium has collected which permits the growing of two or even three rice crops in a year. Thus tank irrigation is as typical of the granites as well is of the trap country. The granites consisting of basic quartz and felspar disintegrate to form a poor sandy soil. When the gneisses contain mica and hornblende the resulting soil has been described as loamy. Agriculturally it is of a greater productivity and often forested. When porphyry occurs in the rocks, weathering often results in the formation of rock shelters and caverns. The soil produced from its weathering especially favours the growth of the satinwood tree. (Chloroxylon swietenia).

The gneissic region is interlaced (as also are the Dharwar rocks) by a series of basic dykes of basaltic composition. They are of more recent geological formation, and are usually associated with the channels through which the trap lavas emerged. These dykes are generally composed of dolerite but contain also a number of other minerals. They are of considerable importance as providing the raw material for many artifacts.

It is perhaps significant to note that with the general

exclusion of the areas where Dharwar rocks occur together with gneisses, the whole of the northern section of this area is occupied by Telegu speakers.

4. The Dharwar rocks. In the Deccan the Dharwar rocks occur only in the western portion, running south from the upper waters of the Krishna river, in the form of a long narrow strips surrounded by the granites. It is now generally agreed that they are older than these latter.¹⁵ The exact process of formation of these rocks is still a matter of contention, but some at least are probably sedimentary although subsequently they may have been metamorphosed and recrystallised under heat and pressure. They consist mainly of talc-chlorite and hornblende schists, and epidiorite with subordinate quartzites including reefs of crushed vein quartz, mica schists, haematite quartzite, and the bluish quartz which is renowned for its gold content. This latter is found usually only in the hornblende schists.

The topography resembles that of the surrounding granites. In general the Dharwars form the highest rocks in the area, and take the form of rolling almost treeless plains with occasional outcrops of harder rocks (epidiorites or ferruginous quartzite ridges). The soil covering is a thick layer of black cotton soil, which supports jawari, cotton, castor and other dry crops. The fissile nature of the underlying rocks, combining with the tortuous narrow

valleys radiating from the watershed makes the Dharwar areas generally unfit for water storage tanks so typical on the granites. The Dharwar region in general corresponds with the extent of the Kannada language.

The Kannada Region.

This cultural and linguistic region, together with the western parts of the Telegu, forms the central and southern sections of the Deccan plateau. Raichur and part of Gulbarga districts, form its northern limit. Archaeologically it is bounded on the west by the thick, deterrent forests of the ghats, on the north by the line of the Deccan trap, on the south by the 'Polygar Belt' and the Tamil language frontier. In the east, the Telegu language makes a convenient frontier, although as Richards says, this line is indefinite, and perhaps the sandstone hills of the Cud-dapah and Kurnool series of the Eastern Ghats are more in accordance with the archaeological boundary.

There have recently been archaeological studies of two sections of the region, and as both have included some geographical survey, they may be mentioned. The southern section, particularly Mysore State, has been described by Seshadri¹⁶, who includes a valuable summary of the raw materials for the microlithic and neolithic tools of the region, and their sources. As these materials do not differ

greatly from those found in Raichur District, this summary is not repeated here. The central section has been covered, in part, by Subba Rao¹⁷, who further included a valuable discussion of the place of Bellary in the cultural map of India, and its relationship with ancient trade routes. The third or northern extremity of the region comprises the Raichur doab and parts of the Gulbarga and Dharwar districts.

Thus it is that the Kannada region includes two of the three sections into which Richards divided the Deccan Plateau: the central and southern. The significance of the northern (corresponding to the Marathi region) has already been indicated. Of the remaining two Richards describes the division thus:¹⁸ the central section is an area of low density of population, broken here and there by patches of medium density, most of them marking the sites of former capitals (ie., Banavasi, Adoni etc.) To the south is a medium density belt in Mysore, bounded by a southern low density belt - the Polygar line. Neither Seshari nor Subba Rao seem to have realised the striking fact that the central section contained a large number of major sites, whilst the southern section contained none, nor that the present distribution of Asokan edicts in the area is also limited to the central section. It cannot be mere chance that brings this about. What is it that gives the clue to this concentration of ancient sites around the upper courses of the Bhima, Krishna, Tungabhadra and Penner rivers? There appears to be a geographical

explanation which indicates in a dramatic manner the vital role of climate for early societies. All these sites lie in a zone of 25" - annual rainfall. The centre of the central section in fact lies in the centre of the 20" - zone, whilst the peripheral sites of the lower Krishna river lie within the 30" - zone. The same relationship exists with other groups of sites, for example, the ash mounds. If we are correct in assuming that anciently a higher rainfall contributed to the dense forestation of the whole Deccan Plateau, then those forest conditions must naturally have varied with the amount of the rainfall, and below a certain figure the forest would become open grass and scrub. Thus clearance would be most easy in areas of lowest rainfall, and it would only be after the advent of plentiful and efficient tools (in this context of iron) and perhaps the reduction of the precipitation that the work of clearing the more densely forested areas would be feasible. The coincident distribution of neolithic sites, ash mounds and Asokan edicts is highly suggestive in this respect..(Pl. 11).

By contrast, the southern section with its 30"-40" annual rainfall and even today comparatively denser forests makes an important and separate region requiring fresh study in this light, for only with the availability of iron tools does the relatively denser modern population become possible.

The Raichur District.

1. General. As has been said, the Raichur District of

Hyderabad lies entirely in the Doab of the Krishna and Tungabhadra rivers. It is bounded on the west by the Dharwar District of Bombay, the south by the Kurnool and Bellary districts of Madras and by Sandur State, and in the north by the Gulbarga and Mahbubnagar districts of Hyderabad. East to west, its greatest length is about 160 miles, and north to south its total length is about 100. (Pl. 5.)

2. Rock Formations. The district lies at the northern extreme of the Dharwar rocks of the previous review. Its rock formations may be detailed under the main heads:-

a). The Dharwars. There are three main and one minor band in the district, running roughly from N.W. to S.E. The main bands may be named from important places lying on or close by them: Kushtagi to the west with its long reefs of exposed ferruginous quartzites; Maski in the centre with numbers of old gold-workings and extending north into Shorapur taluq where it is notable for further gold-workings at Mangalur, and between Deodrug and Raichur in the east. The minor band is situated at the eastern end of the district and runs about two miles west of Gadwal. To the west, in the Dharwar district of Bombay State there are two more main bands, one of which gives its name to the whole system of rocks. The minerals produced from these bands are discussed below.

b). The peninsular gneissic rocks occupy the remainder of the district with the exception of the intrusion of the Cuddapah and Kurnool limestone plateau in the eastern tip,

and the quite insignificant intrusion of tail ends of the Kaladgi series of sandstones (termed Hanamsagar formations in the JHGS) in the N.W. The Kaladgi Series it may be noted consists of a number of almost horizontal beds resting on the gneisses and containing in its lower levels conglomerates mainly consisting of quartz, chert, agate and jasperoid fragments ranging from 1"-4" in size, and providing an abundant source of the raw material of microliths. The granitoid rocks may be divided into four main groups - those of predominantly grey colour, including the hornblendic gneiss, of pink colour including the pegmatite and aplite gneisses, red syenite and granite porphyry. The various soils that arise from these rocks have been already mentioned. The rocks do not follow any clear distribution within the district, although the porphyry occurs in patches along the basin of the Krishna river. The red syenite occurs in very small areas. It was evidently prized for grave-construction and near Peli-penta hill at Lingsugur, several such examples have been discovered (Sites 41 and 87).

Intersecting the granitic and Dharwar rocks is a series of trap dykes, the importance of which as a source for the raw material of neoliths or polished stone axes, was pointed out by Foote.¹⁹ The same writer also noted that the spread of neolithic culture in the south seems to be confined to the limits of the dykes to the north of the Cauvery.²⁰ Subba Rao²¹ further affirmed the relationship of neolithic sites to dykes. The dykes lie in six main groups, their general

tendency being to run W.N.W. and E.S.E. They comprise groups west of Kanakgiri, west of Maski, north of Lingsugur, around Kavital, between Raichur and Gadval, and east of Manvi. Their size varies greatly as does the length. The longest in the district is some 70 miles, whilst the breadth varies from a few feet to 100-200 yards. The larger often take the form of high upstanding ridges.

c). Pleistocene and Recent Deposits. The gravels of the Krishna and Tungabhadra rivers occur well above the modern flood levels. On the south bank of the Krishna they take the form of a mixed shingle of many types of pebble including chert, agate, jasper, quartzite, quartz and chalcedony. These beds are almost certainly a source of raw materials for microliths (see p. 216 f). On the Tungabhadra similar shingle is noticed opposite Hampasagar, whilst in the region of Anegundi considerable recent alluvial deposits may be found.

d). The relationship of the schists and gneisses was detailed by Munn:-²².

The boundary of the schists follows usually their line of strike. The gneisses have eaten wide bays into them and seamed them with networks of pegmatites and aplites. As a rule the gneisses show a general tendency towards lateral invasion of the country, parallel to the schist bands. At the contact margin of the schists and gneisses small shredded patches of the former are met with in the midst of disturbed gneisses.

The ferruginous bands usually ~~take~~ the form of magnetite, largely oxidised to haematitic ore, in layers of less than $\frac{1}{2}$ " thickness. These alternate with quartzite bands of roughly similar thickness. The bands are in intimate contact with chloritic schist, and in some cases hornblende schist.

3. Mineral Deposits. The Dharwar rocks contain a number of mineral deposits, and modern surveys have revealed that in many cases these were anciently worked. As it has been suggested that these workings are often prehistoric and of great antiquity the problem of their age must be discussed later.²³.

The minerals are:-

Gold. The Maski schists contain many exposed bands of blue auriferous quartz. In modern times mining has been carried on at Hatti, Wandalli, Topaldoddi and Chinchkerki, Kadoni, Uti, Maski, Udbal and also at Chik Honkuni in the Dharwar outlier near Deodrug, and at Naranhal near Tawargeri in the Kushtagi band. During the period 1903-1920 the Hatti mines produced an average of over 14,000 oz. each year, whilst the Topaldoddi Gold Mines, Ltd., produced over 4000 oz. in the year 1908-9.

Iron Ore. Bands of ferruginous quartzite occur in the Dharwar schists and there are ancient workings north of Tawargeri. It is, however, certain that smaller deposits of iron ore are widespread in the Dharwar and Gneissic rocks. Samples of iron from ferruginous quartzites of the Kushtagi band analysed by

the Hyderabad Geological Survey assayed an average of 35.3 % of iron, with a maximum of 48.10 % of iron in the proximity of old workings. Numbers of smaller bands are noted by Munn,²⁴ but these have little modern value.

Copper. At Machnur, small quantities of copper and iron ores are to be found in the red porphyritic gneiss. A further small deposit is located north of Gadval. Other sites where copper was noticed (by the Geological Survey) were Mandargi, Chik Hesrur and Hire Hesrur. The Machnur deposits took the form of cupric oxide and basic carbonate of copper. In this connection the find of a lump of copper pyrites in the excavations at Kallur²⁵ is interesting.

Ochre. All along the contact zones of the ferruginous quartzites with the schists, and especially where decomposition has taken place, haematitic ochres are found in large deposits. The hill 1333', west of Nandihal is such a site, and the many pits in the neighbourhood appear to be the result of villagers digging to make red wash for their houses. Another such deposit is to be found at Kalmangi hill, and a third at Myadardoki. Quite apart from the possibility of modern exploitation these deposits raise interesting possibilities in connection with pottery technology (and will be further discussed below p.285,287)

Kankar. It will be noticed below that the black cotton soil gives rise to a calcareous concretion. Munn reports a further source in deposits along the junctions of gneisses and schists.²⁶

When the sub-surface drainage is blocked the deposits sometimes reach a depth of 5 to 6 feet near nullahs. The same writer quotes analyses of several deposits.²⁷ The kankar can be burnt to form excellent lime and indeed is the main source for lime.

Moorum. This is the ordinary disintegration product of the gneissic rocks. The various minerals being loosened on the rock surface to form a coarse grit of quartz and weathered felspar, whilst the alumina, iron, lime and magnesia in the silicates are freed. The moorum is generally stained a dark red by the leaching of the iron. The disintegration of the trap rocks can also give rise to moorum, but in special conditions, not at present fully understood, it may give rise to laterite. It is probable that the conditions involve a plus rainfall.

4. Soils. The soils of the district appear to relate to the interplay of configuration and underlying rock formations. The climatic conditions are largely constant. Two main divisions may be observed: the grey to black "cotton" soil and the grey to red sandy soil. From the view point of configuration the former occurs in its sub-divisions on level or gently sloping surfaces and may often be transported, whilst the latter occurs on more rugged landscape and where the slopes are steeper.²⁸ From this it follows that the black soil is often more mature. From the point of view of rock formation it appears that the granites and gneisses generally give rise

to the grey to red soil, whilst the Dharwar rocks in disintegration produce the black. The trap rocks also produce the black.²⁹.

Thus there is no simple key to the distribution of soils. Mukherjee rightly observed of Gulbarga district that the soils pass "through various grades of colour and coarseness" and ultimately grade into black cotton soil. The same is true of the other end of the scale.³⁰ We may in general conclude that a great part of the more level ground of the district is covered with black-grey soil whilst the more hilly parts are largely reddish, and that wherever the peneplain gives way to a gneissic or Dharwar outcrop the soil will give way to varieties of immature, reddish, disintegrate. We may now list the main characteristics of the two soils.

a). The black cotton soil (regur, yeri bhumi) is described by Wadia³¹ as a very fine-grained soil, sticking when wetted but retaining its moisture for a long time. Among its accessory constituents is a high percentage of calcium and magnesium carbonates, iron and a very large admixture of organic matter, sometimes as much as 10% . Agriculturally it is very fertile, and has earned the name "self-ploughing". In the words of the Bombay Gazetteer³² 'Nature to a great extent does for it what in other soils is left to the plough'. In dry weather it shrinks and cracks forming fissile blocks and the first rains wash the powdery topsoil deep into the cracks, whilst with the absorption of water the newly exposed surface expands.

The calcareous content of the soil is often roughly stratified and in nodular form. When erosion exposes, for any reason, the calcareous layer the soil becomes uncultivable.

b). Red to Grey soils. These soils are comparatively less fertile. They range from red sandy, gritty, soils approaching a finally disintegrated morum to sandy soils, sometimes described as 'loamy'.³³. Their chief distinction is in the comparatively shallow profile. The black cotton soil has an average depth of 4'-5', and at places reaches 10'-15'. The reddish soils rarely exceed a depth of 2'6" and sometimes consist of little more than a sandy grit with low humic content and of no more than one foot in depth. They are again distinct from the black soils in their relatively low organic content. Various sub-types have been suggested above as belonging to parent rock formations, (p.38).

5. Rivers, Drainage and Perennial Springs. The whole district is drained by affluents of the Krishna River which flows in an E.S.E. direction until it meets the more southerly Tungabhadra which flows first N.E. and then almost due east to the confluence at Sangamesvara, a pilgrim spot of some local importance. Each river is fed by a group of tributaries, those of the former flowing in a general N.E. direction and the latter S.S.E. The water-shed follows roughly the 1300' contour and corresponds roughly with the road from Lingsugur to Raichur and on to Gadval, i.e., roughly the line of the new Tungabhadra canal to Raichur. The longer tributaries are

those of the Tungabhadra and include the Hire Halla on which Kopbal stands, the Kanakgiri, Sindhnur and Maski nallas, the latter rising several miles to the S.W. of Mudgal.

In the western part of the district there are a few perennial springs along the contact zone of the gneisses and schists of the Maski bands. Several occur in the vicinity of ancient sites and are perhaps significant. One such spring is east of the 14 mile-stone of the Maski-Lingsugur Rd. A mile further east, beyond the schist belt, there is another that feeds the Togaldinni-Huvinbhavi nalla. Near Palamkalur on the Lingsugur Maski Rd. there is another such spring (within a mile of the sites of Kotegal and Anandagal). At Hira on the Hutti-Raichur Rd., and at the 6 furlongs stone on the Lingsugur-Gurgunta Rd. are two more. On the Kushtagi band near Todki on the Lingsugur-Tawargeri Rd., and at Chik Bhergi, nine miles further east are two more springs.

6. Rainfall. The average annual rainfall of no part of the district exceeds 30", and a part of the Maski, Gangavati, Sindhnur and Manvi talukas lies in the 15"-20" zone. (Pl. 2). It is interesting to notice how all the main neolithic sites of the Kannada region lie in the modern famine zones of Bellary, Raichur and Kurnool districts and the northern parts of Mysore State. Conversely, as Subba Rao noticed in the western zone of Bellary, in the areas of slightly higher rainfall, there are no major sites, whilst the vegetation is richer.³⁴

As the line of the Western Ghats is approached the rainfall increases. That proximity is more important than height can be seen from the following extract.^{35.}

Place	Height	Rainfall Average May - October	Place	Height	Rainfall Average May - Oct.
Gooty	1168'	19.95"	Shimoga	1900'	26.42"
Bellary	1455'	14.81"	Kalghatgi	2100'	27.12"
Raichur	1325'	23.12"	Dharwar	2586'	28.90"
Lingsugur	1300'	21.46"	Kaladgi	1744'	20.02"
Chitaldroog	2383'	21.60"	Gokakar	1819'	26.42"
Mundargi	1950'	16.18"	Belgaum	2550'	44.71"
Hubli	2061'	23.33"	Kohlapur	1797'	37.48"
Mahabalesvara	4540'	255.48"	Lonavla	2037'	164.58"
Matheran	2200'	244.70"	Baura	2800'	251.94"

Thus it may be stated that the Deccan Plateau lies in a "rainshadow", or rather that the rain clouds are exhausted before the ghat is passed. Blanford attempted to show that the general deforestation and desiccation of the plateau had further, a reciprocal effect in discouraging rainfall.^{36.}

This negative effect should not be overrated, although it is undoubtedly true that ^{to} some extent forestation encourages the regular exchange of water, for under present conditions little more than thin scrub will grow in the district. Indeed, it seems that to bring about a change in the present distribution of water, a more universal alteration in climate, involving a change of prevailing winds would be required.^{37.}

7. Forestation and Rainfall. Deshpande³⁸ divides the area east of the Kannada ghats into three rainfall zones: the transitional area of 70"-40", the Krishna basin 40"-30" and the Bijapur plateau, 30"-20". The ghats act as a curtain for human activity and focus attention upon the trade routes which pass through them, linking the plateau towns of Hubli, Belgaum and Dharwar with the coast. The agricultural and forest patterns reflect the changes of rainfall that these zones witness.

Talbot described three main belts of forest extending inland from the coast. 1. The evergreen tropical forest of the coastal strip. 2. The mixed deciduous and evergreen Konkan flora of the ghats, and 3. Mixed deciduous Deccan flora of monsoon and thorn forest formations of the plateau.³⁹ Champion further subdivided the critical third belt into a) areas of dry teak forest, b) dry mixed deciduous, c) dry thorn.⁴⁰ Of these a) occurs in regions having a rainfall of 50" or more and a fairly well defined dry period. Such forests occur in patches on the high plateau east of the ghats. The trees are nearly all deciduous, and bamboos, canes and ferns abound. The landscape gives the appearance of parkland or savanna when the undergrowth is burnt clear. b) occurs with a rainfall of 35"-60" on the plateau east of the Sahyadri ghats. The trees are mainly deciduous, and *Terminalia tomentosa* (Telugu: nella-maddi), *Anogeissus latifolia* and *Boswellia* predominate. In c) thorn forests occur dominated by *Acacia catechu* and *Acacia sundra*. Dry deciduous trees of stunted

growth are found, among them the Euphorbias. On the black cotton soil forests of babul (*Acacia arabica*) are found, but they may be regarded as planted. Near rivers *Terminalia* and *Pongamia glabra* (Tamil: pongam) occur together with acacias and a dense grass undergrowth. This flora is found when rainfall is less than 35".

It is into this region that Raichur falls. The Imperial Gazetteer reports Teak, Ebony and *Pterocarpus marsupia* (Hindi: Bījasāl), as well as *Terminalia tomentosa*, *Hardwickia binata* (Telegu: Eppa), *Cossia auriculata* (Marathi: Tarvar). Mango, nim, tamarind and varieties of ficus are all planted.

8. Agriculture and Vegetation. The agricultural products of the district fall into two parts.⁴¹ In the northern zone, including the greater part of the district are Jawar, Cotton and Bajri, whilst in the southern, which includes the rich irrigated land around Anegundi, rice, sugar-cane, sesamum, and pulses are cultivated.

The change from the wetter climate of the western plateau to the eastern (Raichur) area is again clearly marked and may be compared with the rainfall and forest zones.⁴²

1. Sahyadri Ghats. Sirsi District - Percentage of cropped area:

Rice.	Sugar-cane.	Betelnut.	Pepper.	Cardamom.
63	1.58	19	5.5	2

2. Transitional Zone. Areas in acres, 000 omitted.

Population.	Total area.	Cultivated.	Rice.	Jowar.	Wheat.	Bajri.
347,000	1,729	403	230	380	105	34
Ragi.	Pulses.	Oil-seeds.	Tobacco.	Cotton.	Garden.	
37	219	34	17	216	24	

3. Eastern Plateau, (Western Taluks) Areas as above.

Population.	Total area.	Cultivated.	Rice.	Jowar.	Bajri.
763,000	2,205	1903	21	568	31
Wheat.	Pulses.	Oil-seeds.	Cotton.		
198	10	662	499		

4. Eastern Plateau, (Eastern Taluks) Areas as above.

Population.	Total area.	Cultivated.	Jowar.	Bajri.	Wheat
1015,000	2624	2325	1869	83	142
Pulses.	Garden.	Oil-seeds.	Cotton.		
121	20	120	690		

5. Raichur District. (1901) figures in sq. miles.

Total area.	Cultivated.	Cultivable Waste.	Forest.
(Khalsa land*)			
2319	1670	127	120

Not available for cultivation.

402

Of this area only 36 sq. miles were irrigated.

Main crops.	Jowar.	Bajri.	Cotton.	Rice.	Oil-seed.
	781	141	285	33	77
	(47%)	(8%)			

* i.e., those lands administered from the Hyderabad State Government.

9. In conclusion we may summarise thus: Raichur district lies in the heart of the northern Kannada region of peninsular India, and apparently in the centre of the Deccan Plateau neolithic culture. It was probably anciently an area of attraction with relatively easily cleared scrubland, surrounded by resistant areas of higher rainfall and denser forest. These areas could only be cleared with difficulty and generally this only became possible with the advent of iron tools, but with the passage of time and the reduction of the rainfall of the whole plateau (in part the result of human action, and itself acting reciprocally), the northern Kannada region became what it is today, a semi-arid area of low density of population. With the southern extension of the areas of settlement the district seems to have become an area of transition bearing the main land route from the north to the southern Kannada region, and thence to the Tamil plain. It is probable that at no time has it been suitable for large scale cultivation of rice, and millet and other cereals, have probably been, at all stages, the staple diet of its inhabitants. The prosperity of the district must, in later times, have rested upon its sources of gold and iron, and growth of cotton.

Some idea of the natural vegetation of the district may be had by observing that of the Benkal forest (Pl. 13). This area is probably virgin. With the modern water table often at a considerable depth the inhabitants had anciently to use the non-porous nature of the gneissic rocks to encourage surface collection of water. This may be one of the main reasons

why so many villages were founded, and still persist, at the foot of granite hills or even on their slopes (Pls. 12a and 14a), and why the surface drainage tank plays such a vital role in the life of the district. It is only in recent years and with comparatively advanced technical aid that many shaft wells have been sunk.

Thus it is that this complex and ever changing interplay of natural forces, of wind and rain, rock, sand and soil, produce the setting for the dramatic range of forests and flora which cloth the western ghats and the Deccan plateau. And this is the homeland in which the neolithic inhabitants of Raichur first settled. As we now proceed to search out the traces of man and his succeeding cultures in the District, we must, throughout, retain a picture of the geographical environment in all its spatial and temporal dynamics; for to divorce man from his environment would be as erroneous as to divorce the material relics of his culture from the human being who made and used them.

CHAPTER I: NOTES AND REFERENCES

1. Richards, F.J. Ind. Ant. LXII. 1933.
2. Richards, F.J. Ind. Ant. LIX. 1930, p.212.
3. The Anicut is a stone dam built across a river so as to raise the water level and permit canals to be taken from it. The system is certainly ancient and is attested in early medieval times. See Thurston, E. Madras, 1913, pp. 204-5, and Diksitar, V.R.R. History of Irrigation in S. India. Indian Culture 12. 1945.
4. This summary is largely based upon Thurston, loc. cit.
5. The following paragraphs are mainly based upon Heron, A.M. A Popular Geology of Hyderabad, 1948 and Munn, L. J.H.G.S II, pt. 1 and Vol. III pt. 1 (1934 and 1936).
6. Fox, C. The Personality of Britain, 1932 pp. 53-5.
7. Haimendorf, C. von F. The Chenchus, 1943. The Reddis of the Bison Hills, 1945. The Raj Gonds of Adilabad, 1948
8. Imperial Gazetteer, Vol. I. 1909. Ch. VII.
9. Deshpande, C.D. Western India, A Regional Geography. pp. 114-5.
10. Belgaum District Gazetteer, 1884, pp. 582-4.
11. Wadia, D.N. Geology of India, 1926 pp. 194.
12. ibid, p.200.
13. ibid, pp. 197-8.
14. Schoff, W.H. The Periplus of the Erythraean Sea, 1912, p.51; for the location of Tagāra (modern Ter) see Fleet, E.J. J.R.A.S. 1901, p. 537.
15. Smeeth, W.F. Pisc, 1924. pp. 158-9, ibid. Outline of the Geological History of Mysore, 1916, p. 4 ff.
16. Seshadri, M. loc. cit.
17. Subba Rao, B. Prehistoric and Early Historic Bellary, 1949, pp. 30-44.

18. Ind. Ant. LIX. p. 217.
19. I.P.P.A. p. 17.
20. ibid p.36.
21. Subba Rao, loc. cit. 1949.
22. Munn, L. J.H.G.S. II pt. 1. p.4-5 etc.
23. Munn, L. Method in Ancient Gold Mining, T.M.G.I.I.XXX 1936, pp. 108-9. "I do not think that my readers will object to 1300 B.C. I personally would like to ante-date that conservative estimate" (for the Early Iron Age and Mining of S. India).
24. Munn, L. J.H.G.S. II pt. 1. pp. 11-19.
25. A.R.H.A.D. 1937-40 pp. 24-5.
26. Munn, L. J.H.G.S. II Pt. 1. p.102.
27. ibid, p. 103.
28. Mukherjee, E.K. J.H.G.S. IV Pt. 1. p. 42, Simkin, E. An Agricultural Geography of the Deccan, 1927, p.9.
29. J.H.G.S. III Pt. 1, pp. 83-5.
30. Mukherjee, loc. cit. p.41.
31. Wadia, loc. cit. p.268.
32. Bombay Gazetteer, Vol. XXII, p.255.
33. Simkin, loc. cit.
34. Subba Rao, 1949, loc. cit. pp.34-5.
35. Blanford, H.F. The Rainfall of India. I.M.M.III, 1886.
36. Blanford, H.F. ibid pp.131-41.
37. Blanford, H.F. ~~The~~ Geology of India, Vol. 1.
38. Despande, loc. cit.
39. Talbot, W.A. Forest and Flora of the Bombay Presidency.

40. Champion, A Preliminary Survey of the Forest Types of India and Burma.
41. Simkin, loc. cit. p.63.
42. ibid and Deshpande, loc. cit. pp. 96, 105, 110 & 116.

CHAPTER II

AN ACCOUNT OF PREVIOUS EXPLORATIONS AND EXCAVATIONS
IN THE RAICHUR DISTRICT AND MENTION OF CERTAIN KEY
WORK OUTSIDE THE DISTRICT

CHAPTER II

AN ACCOUNT OF PREVIOUS EXPLORATIONS AND EXCAVATIONS IN THE RAICHUR DISTRICT AND MENTION OF CERTAIN KEY WORK OUTSIDE THE DISTRICT

I. Previous Exploration and Excavation.

The earliest modern reference to antiquities in Raichur District is contained in the work of Meadows Taylor.¹ This keen observer did not apparently discover any sites, although for some years a resident there. He does, however quote the Rev. G. Keis who reported one site 'midway between Mallapur and Yemmiguda' (i.e., in the hills near Chik Benkal). A site is mentioned of 'twenty to thirty' dwarf houses near Mallapur, and a third site about 'five miles S.W. of Anagundi', although Keis did not visit it. The first two sites are described in more detail in Chapter III (No.6) and (No.44), whilst there can be little doubt that the third is the Shivapur South Site (No.94).

The work of Meadows Taylor in the Shorapur area forms the basis for subsequent study of the grave sites of the region, and a short summary of his main conclusions will therefore be made.

The next account of exploration is contained in the notes of Bruce Foote. These contain archaeologically the most valuable material for the distribution of ancient sites, and form one of the bases of the present

research.² A list of these sites and commentary upon the age of the finds is included in this chapter.

Beadon's discovery of the Asokan Edict at Maski³ marked an important stage in the history of the district, for although the Siddapura inscriptions had been known since Rice's discovery in 1892, the new Edict extended the area of Asokan influence to Raichur district. With this discovery may be linked those of two further minor rock edicts at Kopbal some twenty years later.⁴ The archaeological significance of these discoveries will be dealt with below (p.54)

The exploratory works of Leonard Munn and of members of the Hyderabad Geological Survey recorded in the Survey Journal and other publications deserve recognition. Although Munn was no trained archaeologist, and many of his ideas are now shown to be incorrect, it must be allowed that he did in fact visit a large number of sites (discovering many of them) and that the great value of his observation remains. The present survey would not have been possible in the limited time without this invaluable ground-work.⁵

The Hyderabad Archaeological Department has also undertaken various works of exploration and excavation in the district. This work will also be discussed and some attempt made at ^{an} estimate of published accounts.⁶ Finally

there is Gordon's report upon the excavations at Maski.

II. Of the following key sites outside the district a brief account will be given:- (1) Meadows Taylor's reports from Shorapur (mainly of graves). (2) The excavations of Krishna and Wheeler at Brahmagiri and Chandravalli. (3) The explorations and excavations of Subba Rao at Sanganakallu and in Bellary. (4) The excavations of the Hyderabad Archaeological Department at Kondapur, and (5) Wheeler's and Casal's excavations of the Roman trading station at Arakamedu near Pondicherry. These sites will be listed separately.

Sites which were revisited in the present survey are marked in the list by an asterisk (*); and further reference will be found in the next chapter. The sites will be treated in the following manner: Location (reference where possible to the nearest village and map reference); Source or sources of report; Description of site from source; Interpretation of description where necessary or possible in terms of present terminology.

Adnāl: see Lingsugūr.

1. Agoli. ? Long. $76^{\circ} 23'$ E. Lat. $15^{\circ} 15'30''$.

ARHAD 1935-6 Apx. D.

? Circle graves. The location of the site is not mentioned, nor is there clear reference to its nature.

2. Alganpalli. Long. $77^{\circ} 42' 16''$ Lat. $16^{\circ} 10' 42''$.
JHGS Vol. III Pt.1 p.82. A fine grained dyke west of Alganpalli running ESE to East is found to be strewn with fine chips of the same rock, suggesting a factory site.
3. Alisandi Hill. Long. $77^{\circ} 0'$ lat. $16^{\circ} 12'$. West of Sirwar. Foote IPPA p.123. and Pl. 17 no.50. Also ARHAD 1935-6 Apx. D.
A series of chert flakes, a crescent-shaped perforated chert bead (Foote). Iron slag and artifacts (ARHAD).
4. Anandagal. Long. $76^{\circ} 40' 30''$ Lat. $16^{\circ} 5'$. Foote IPPA p.124 and ARHAD 1935-6 Apx. A. ARHAD. 1936-7, p.8.
Just 4 miles south-west by west of Wuttugallu. An important neolithic site on the fort crowned hill and the fields to the west of it. Foote procured a good series of celts of trap, a chisel, chert flakes, and flakes of agate and chalcedony. Pottery of polished red ware, the side of a chatty with a raised fillet of vertical rope markings. (Foote). Artefacts and slag (ARHAD). About a mile W. of the main site the little hillock of Totegal yielded further polished stone and microlithic artefacts.

(The pottery described by Foote seems to be of B ware).

5. Anehosūr. ? Long. $76^{\circ} 25' 30''$ Lat. $16^{\circ} 8' 30''$.

Munn JHGS. II pt. 1. ARHAD 1935-6.

Site produced microliths and celts.

6. *Benkal Forest. Long. $76^{\circ} 26'$ Lat. $15^{\circ} 25'$. Meadows

Taylor. Collected Papers, HAD 1941. p.58 et seq. Munn JHGS II Pt. I. p.130 et seq with plates. ARHAD 1935-6 Apx. A.

Keis visited the site and described about a hundred "dwarf houses", lying on top of a granite hill. He was of the opinion that the larger structures lying mainly to the South were habitations, whilst the smaller to the North were graves. Of the former he noticed that the port-hole was not regularly orientated, that the closed erections had a floor slab, that they were all erected upon the solid rock, and that in none could he find any pottery. Of the burying ground he measured a number of the long coffin-shaped tombs, both single and double. He also noticed the tank near the settlement in "a natural hollow of the rock". He assumed fire dressing to have been employed for the detaching of the gneissic slabs,

but noticed one instance of a "line of little holes made in the rock by a small chisel, just in the same way as the Waddiwars do" at present. Taylor commented on these notes that he could not agree that some of the remains were not graves. Munn expanded the description of Keis. He considered the stone to be hammer dressed. He made a plane table survey of the site which is as yet unpublished. (A copy of the plan is in the office of the Geological Survey of Hyderabad). He noticed that the natural tank had been "improved by artificial means", and estimated from the great number of graves that their erection was spread over a very long period. He described the graves as dolmens. He also left plans of a number of them, and although he did no excavation, he found no trace of bones, pottery or beads. Munn also discovered several rock paintings in the vicinity of the graves. One of a hunting scene with men on horses, and a man holding an iron axe.⁷ The Hyderabad Archaeological Department subsequently visited the site, and although no new information is published in the report,

copies of the paintings were made (Pl. 114), and a large celt of grey-green trap rock now in the Hyderabad Department Museum was found (the exact locality is not clear). Also under the floor slabs of a grave several specimens of red-and-black (B1) ware and of a large urn rim in typical B2 painted ware were found. These are in the Maski Museum. (Pl. 92b).

7. *Billamrayan Gudda (Bellamur Rayan Gudda, Foote).

(Long. $76^{\circ} 29'$ Lat. $16^{\circ} 10'$). About two miles West of Lingsugūr Cantonment. Foote IPPA p. 122-3. Munn JHGS II Pt.1. p.123 & 131. ARHAD 1935-6 Apx. A. Munn PPF. p.230, 243.

On the Southern side of a fortified hill. From the nature of the finds and of the very archaic character of the pottery I assume that the site is purely neolithic. Finds included a grey pottery bull's head and a (?) dabber of similar material. (Pl. 94 Nos. 9210) (Foote).

Munn found a large number of neolithic artefacts at the site and concluded that it was a factory. Many of the tools were incomplete (Munn PPF Pl.1). The finds came from round the foot of the hill. He noticed

that to the South the ground is "over 50% wood-ash" and connected this with the iron slag found nearer the hill. Munn also found a number of rock-bruised animal engravings, representing an elephant, barasingh stags, and large horned cattle, as well as men with "prominent ears". All these were high up among the rocks and not easily seen or approached. Near the hill he reported stone circle graves.

ARHAD 1935-6 reports a survey of the site but provides no further information. A large collection of neolithic artefacts and microliths was made.

8. *Chik Benkal. Long. $76^{\circ} 26'$ Lat. $15^{\circ} 26'$. Munn JHGS II pt. 1.

In the map appended to the report Munn indicated the discovery of circle graves at the foot of the hill near the Benkal Forest Site. This site is about $1\frac{1}{4}$ miles ESE of the village. The graves Munn described as made of outlines of rocks 20' square with an internal ash ring, and stone cist with stone circle surrounding and southern entrance passage. (The village itself is distinguished by the graves of two Lingayat Saints).

9. Chik Hesrūr. Long. $76^{\circ} 38' 30''$ Lat. $16^{\circ} 7' 30''$. Munn JHGS II pt. 1.

Rock bruised graffiti. The rocks are covered with

small drawings that I am satisfied are not modern. (Munn. PPF p.236).

10. *Chinna Chintadura. Long. $77^{\circ} 42' 5''$ Lat. $16^{\circ} 19' 18''$.
Munn JHGS. III pt. 1. p.80.
More than twenty stone circles were noticed within a mile North of the village. (In this and subsequent references the term "stone circles" may be taken to refer to the B type graves described in Chapter III).
11. *Darūr. About two miles east of Long. $77^{\circ} 43' 40''$.
Lat. $16^{\circ} 14' 7''$. Munn. JHGS III pt. 1. p.80.
More than 30 stone circles all well defined.
12. Devampalli. About a mile North-East of Long. $77^{\circ} 41' 8''$ Lat. $16^{\circ} 14' 33''$. Munn JHGS III pt.1. p.81.
About 7 stone circles.
13. Duddal. Long $77^{\circ} 7' 30''$. Lat. $15^{\circ} 58' 30''$. About $1\frac{1}{2}$ miles NNW. Munn JHGS III pt. 1. p.81.
A group of stone circles.
14. Gabur. South of Long. $77^{\circ} 10' 30''$. Lat. $16^{\circ} 18' 30''$.
Munn JHGS III pt. 1. p.82.
Stray artefacts were picked up.
15. *Gadwal-Latipur Track. Long $77^{\circ} 50' 33''$ Lat. $16^{\circ} 13' 4''$. Munn. JHGS III pt. 1. p.81.
About twenty stone circles were located South of the track.

16. Gaudūr. Long. $76^{\circ} 40'$ Lat. $16^{\circ} 16'$. Foote IPPA p.95. Munn, ARHAD 1927-8 Apx. C. Munn JHGS II pt.1. p. 126 et seq. ARHAD 1935-6 Apx.A.
- This site is an ash mound. It lies just North of Gaudūr village on the Gaudūr-Machnūr track, and is sometimes also named after the latter village. It was discovered by Bosworth Smith, who had an analysis made which is quoted by Foote. Munn gives a plan of the mound which then measured 200' x 50' and about 25' thick at the southern end. (Pl. 42a). The mound is used as a quarry by villagers who obtain red wash for their houses from it.⁸ Munn published a photograph of the mound, and also of an exposed section from the quarry. Here there is revealed a regular series of evenly laid strata from which the present writer reconstructed the sketch section (Pl. 43). Munn further noted that in the lower layers, quantities of rubbing stones, and Mullackers (round crushing stones) occurred. This is reminiscent of Foote who recorded several mealing stones and a celt in the Budikanama mound in Bel-lary District.⁹ Munn also collected a number of bones which, after examination, were revealed to be the "big bones of cattle". The mound was within two miles of ancient copper and iron workings at Machnūr. The Hyderabad Archaeological

Department survey revealed the fact that micro-liths were found in abundance on its surface. (There seems to be no description of the potsherd referred to by Munn, and I could not find it among the relics that are still stored in the Office of the Geological Survey, Hyderabad).

17. Gobarkal (Foote, Goburkallu. Survey of India, Gorebal). Long. $76^{\circ} 47' 40''$ Lat. $15^{\circ} 138' 0''$. Four miles South by East of Rodalkunda. Foote IPPA p.127. ARHAD 1935-6 Apx. A.
The hill lies immediately West of the Gorebal Village. It is described by Foote as a small settlement of the neolithic folk. Two celts were found, along with pottery from a recess in the western side of the hill. The pottery probably included red-and-black (B1) ware, red (B3) ware, and grey (?) Neolithic A type ware, but is not illustrated by Foote. The later visit of the Department produced some iron slag.
18. Gorebal. ARHAD 1935-6 Apx. D. This is apparently the same site as Gobarkal (Q.V.)
19. Gutbichala Hill. Long. $77^{\circ} 18' 30''$ Lat. $15^{\circ} 59' 30''$. Munn JHGS III pt. 1. p.82.
A group of stone circles north of the hill.
20. Halapur. Long. $76^{\circ} 40' 45''$ Lat. $16^{\circ} 1' 0''$. Foote IPPA

p. 125. ARHAD 1935-6 Apx. A.

A small hillock of granite, north of the village. Both sources mention the finding of artefacts, presumably neolithic in type.

21. *Hardigudda. Long. $77^{\circ} 2'$ Lat. $16^{\circ} 0' 30''$. Munn JHGS III pt. 1. p.82.

The site is near a small quartz hillock about $1\frac{1}{2}$ miles SSE of Hardigudda village. Nearby are a number of dislodged rectangular slabs of granitoid gneiss, most of which are now used as field boundary stones. Some stones are still standing and Munn identified them as the remains of a stone alignment.

22. Harnahalli. Long. $77^{\circ} 9' 30''$ Lat. $15^{\circ} 59'$. Munn JHGS III p.t 1. p.81.

A very big group of stone circles about $1\frac{1}{2}$ miles North of the village.

23. *Hire Benkal. Long. $76^{\circ} 27' 30''$ Lat. $15^{\circ} 26' 15''$. Munn JHGS III pt. 1. p.124.

There is an ash mound about 3 furlongs NE of the village on the South side of a granitic hillock. About half a mile WNW of the village by the cart track are stone circle graves.

24. Honhalli. Long. $76^{\circ} 33'$ Lat. $16^{\circ} 12' 30''$.

Foote IPPA p.128. ARHAD 1935-6 Apx. A., and information from Dr. L.S. Krishna Murti, Director

Hyderabad Geological Survey.

Foote found a neolithic chopper of trap; the actual site is not mentioned. The later survey mentioned a smelting factory near the village, but gives no indication of the age of the site. Krishna Murti, however, found a small hillock north of the village on the top and slopes of which was a large number of imported pebbles of banded agate, chert, and other foreign stones, many of which had been worked. He also found a number of microliths and concluded that this must be a factory site. He considered that the stones were imported from a trap area.

25. *Hunkunti (locally pronounced Hankunti). Long. 76°
2' Lat. $15^{\circ} 8' 30''$. Foote IPPA p.127., and Pl.53,
and Pl. 39. Incorrectly referred to in Ancient
India Vol. 4. p.310 as Anegundi opposite Hampi.
Foote mentions this site as opposite to the town
of Hampāsāgara, in Bellary District, on the left
bank of the Tungabhadra. There were two distinct
features. A bed of mostly broken pottery capping
the regular alluvial bank of the river for several
hundred yards, and a group of graves. From the
first area came 'half polished' redware. The
graves lay some distance NE. Some had been
exposed by a high flood of the river that had

torn up the surface. Among the finds were a bowl of red with trellis pattern in lighter red (B2 painted ware) and fragments of a remarkable four footed vessel which strongly resembled a grotesque elephant with a very small head which could not be found. Foote also found a number of flakes and cores of chert in the area.

26. Idgaunpalli. Long. $77^{\circ} 38'$ Lat. $16^{\circ} 0' 40''$.

Munn JHGS III pt. 1. p.79.

An ash mound is situated about 2 miles to the West of the village and to the North of the track from Idgaunpalli to Ij. It is of oval shape about 250' by 200' and about 15' in height. Local tradition holds the mound to be the site on which old shepherds used to pound their cattle and where fire was burnt at night to ward off wild animals.

27. Idulpalli. Long. $77^{\circ} 44' 33''$ Lat. $16^{\circ} 5' 42''$.

Munn JHGS III pt. 1. p.80.

About four or five stone circles are noticed near the village.

28. Jukuru. Long. $77^{\circ} 12' 30''$ Lat. $15^{\circ} 18'$.

Munn JHGS III pt. 1. p.81.

A big group of circles one mile West of the village.

29. *Karadkal (Kadkal). Long. $76^{\circ} 30'$ Lat. $16^{\circ} 10'$.

ARHAD 1936-7 p.8 and 14.

To the North of the village a mound was excavated by the Archaeological Department, and a Jain temple, images, coins, medieval and other finds were made. A number of sherds, however, from the excavation appear to be earlier and date (?) from late Sātavāhana times. To the North of the site, West of Paritgwādi, a small hill was flanked by about 40 cairn circle graves.

30. *Kallūr. Long $77^{\circ} 13'$ Lat. $16^{\circ} 8' 30''$. ARHAD 1938-39 p. 24-28.

The site became famous through the discovery of the copper swords reported in ARHAD 1938-9 p.23 (Pl.V). The find was made in a crevice in the rocks by a party of stone waddars (quarrymen). The Archaeological Department of Hyderabad subsequently made an extensive survey and carried out excavations. Little stratigraphical evidence seems to have emerged, but a furnace was discovered together with fragments of copper implements, including part of an axe, bangles, a lump of copper pyrites, and a lump of iron-ore containing mica. At a short distance, quantities of iron slag, ash, crushed mealing stones and quartzite were found. No description of the

furnace seems to have been published. The other finds illustrated, give better evidence for dating points. They included a Sātavāhana coin, applique decorated redware, and polished redware 'sprinkler' tops (wrongly called terracottas of top shape in the report), and a piece of broken 'four legged pottery'. All these objects appear to indicate Sātavāhana (pre-Medieval) connections. The meaning of large numbers of microliths and 'neolithic' chisels and axes will be considered in a later chapter, as will the dating of the rock-bruised engravings. The presence of a small perennial spring near the Yemmiguda hill was rightly noticed, and its importance for a metallurgical site commented upon.

31. Kamalhatti. Long. $77^{\circ} 14'$ Lat. $16^{\circ} 0'$. Munn JHGS III pt. 1 p.81.

A group of stone circles 1 mile NNW of the village.

32. *Karatgi. Long. $76^{\circ} 39' 30''$ Lat. $15^{\circ} 37'$.

Munn. Letter published in ARHAD 1927-8. Apx.C. p.31. PPF p.250.

The site yielded much 'red painted' ware, shank beads and bracelets and two terra cotta heads with pronounced and exaggeratedly large ears.

Munn concluded that this was the site of a Mauryan town. (The pottery finds are of B2 and 3

wares).

33. Katakñūr. 1. Long. $77^{\circ} 17'$ Lat. $15^{\circ} 57' 45''$.

Munn JHGS III pt. 1. p.82.

One mile East of the village is a group of stone circles.

34. 2. Long. $77^{\circ} 16' 50''$ Lat. $15^{\circ} 18'$.

Munn JHGS III pt. 1. p.82.

A very big group of stone circles just North of the village.

35. *Kavitāl. (Foote, Kautala). Long. $76^{\circ} 47' 15''$ Lat. $16^{\circ} 5' 15''$. Foote IPPA p. 128. ARHAD 1935-6. Apx. A.

Foote found a perfect greenish coloured celt and a red granite cylindrical mealing stone near a hill to the South-East of the village.

The later report mentioned the presence of an ash mound with a temple on it West of the village, with iron slag and pottery in the mound. Artefacts were found nearby.

36. Kopbal. Long. $15^{\circ} 21'$ Lat. $76^{\circ} 10'$. HAS 10. HAS 12.

The importance of Kopbal as a medieval and muslim town was already known, when a local scholar in 1935 discovered Brāhmī inscriptions which examination proved to be Asokan. A subsequent survey by the Archaeological Department revealed the presence of a group of dolmens on the top of

Mallimalappa hill West of the Pālkigundu.

Yazdani with considerable daring suggested that these might date from Mauryan times. In editing the Kanarese inscriptions found at that time Krishnamacharlu (HAS 12) identified the site with the maha Kopana nagara, a tīrtha in the ninth century, and the headquarters of a branch of the Silāhāra family. Very little Archaeological evidence, however, was put forward for the ancient occupation of the site.

37. Kyerihāl (Kerehal) Long. $76^{\circ} 32'$ Lat. $15^{\circ} 40'$. Foote IPPA p.128. ARHAD 1935-6 Apx. A.

4 miles South of Kalmangi on the Sindhnūr-Tāwar-geri Rd. The site is close to the Hire Nalla. Artefacts were found. Foote found a muller mortar or goldsmith's anvil.

38. Kotekal (Foote, Kotegallu). Long $76^{\circ} 41' 30''$ Lat. $16^{\circ} 7'$. Foote IPPA p. 123. ARHAD 1935-6 Apx. A. Munn PPF.

The most important part of the neolithic settlement lay to the west of the existing village. Several celts were founds, and a series of flakes of chert and agate - several serrated, one biserate, and a small scraper of white chalcedony. Pottery included the rim of a large grey bowl the lip of which was decorated with a 'raised

twitch fillet'. (Foote).

The later survey produced iron slag and artefacts, whilst Munn notes the presence of rock bruised graffiti.

39. Kurkundi. Long. $76^{\circ} 53' 30''$ Lat. $16^{\circ} 10'$.

Munn. JHGS II pt. 1. ARHAD 1935-6 Apx. D.

Munn noticed that field 94 contained a boulder marked with 'Ogham-like writings' of which he made a photograph. There were also a number of domestic rubbing marks. About 1 furlong South was an ash mound. Munn elsewhere mentioned that similar rock markings have been discovered in Mysore.¹⁰. The hill top has a rock shelter traditionally the find spot of some old swords. The later survey produced no further information. (Similar marks do occur in other parts of this and neighbouring districts. It is suggested (below under Gudabelur) that their probable use was for numerical records rather than as script).

40. Kutukunūru. Long. $77^{\circ} 31' 20''$. Lat. $15^{\circ} 56' 15''$.

1 mile West of the village on the north side of the track Kutukunūru-Talmavi.

Munn. JHGS III pt. 1. p.36.

An ash mound about 280' x 250' x 20' in height. A few broken pounding stones were found on the edge of the mound.

41. *Lingsugūr (Cant). Long. $76^{\circ} 31'$ Lat. $16^{\circ} 10'$.

Munn ARHAD 1927-8 Apx. C. PPF p.228, 242-4.

ARHAD 1936-7 p.8.

Graves were discovered in the bed of Lingsugūr tank, and a further group South East of the talukdar's office. Munn assumed that these originally linked with those found by him South and East of Billamrayan gudda. He classified the burials as, stone circles with or without underground cists, and oblong graves of boulders with Southern entrance passage, surrounded by stone circles with outside ring of ash and square platforms. The archaeological report mentions polished stone implements to the North of Lingsugūr in the vicinity of Adnāl and at Agatgi. Munn found a neolithic implement to the North of the Cantonment. Ash from the graves was sent to Plenderleith who analysed it thus: presence of much silica, silicates and oxides of iron, aluminium, calcium, magnesium and potassium with small quantities of manganese oxide, phosphate, sulphate, carbonate and organic matter.

42. Mailugudda. Long. $77^{\circ} 36' 35''$. Lat. $16^{\circ} 15' 30''$.

Munn JHGS III pt. 1. p.81.

On the track North to Patapalem about half a mile West of the track. A large group of stone

circles.

43. Maladkal. ? Madnakal q.v. in 2nd. list.

Munn JHGS III pt. 1. p.82.

Stray artefacts were picked up.

44. *Mallapur. Long. $76^{\circ} 29' 15''$ Lat. $15^{\circ} 23' 0''$.

Meadows Taylor, Collected Papers, HAD 1941, p.57.

Munn PPF p.246.

Keis in his letter to Meadows Taylor mentioned a settlement of dwarf houses near Mallapur itself. The remains of some twenty or thirty erections and graves are to be seen. (This site was identified by the present writer and is described in Chapter III).

Munn found paintings in a very large cave North of Mallapur. These paintings, which lie at the northern end of a valley include animals and a curious cross hatched human figure (copies and photographs of these paintings are preserved in the office of the Geological Survey of Hyderabad).

45. Manchanpalli. Long. $77^{\circ} 36' 40''$ Lat. $16^{\circ} 3' 40''$.

Munn JHGS III Pt. 1.

Two furlongs SW of the village on both sides of the track, to Murdoddi, are two ash mounds. They have been practically removed by villagers. Both are about 100' x 50' x 5' in height.

46. *Manvi. Long. $77^{\circ} 2' 15''$ Lat. $15^{\circ} 59' 30''$.

Munn JHGS III pt. 1. p.77.

An ash mound was found at the NW angle of the hill. It contained broken rubbing stones and pot sherds.

47. *Maski. Long. $76^{\circ} 39'$ Lat. $15^{\circ} 57'$.

Foote IPPA p. 125. Munn ARHAD 1927-8. HAS I. 1915.

Munn JHGS II pt. 1. ARHAD 1935-6 Apx. A. & B.

1936-7, p.14., et seq. Gordon, The Cultures of Maski and Mādhavpur.

Foote described the site as important but not so characteristically neolithic as Anandagal. He found a "goodly number" of chert flakes, neoliths, grinding stones, and chank bangles. Pottery included a terra cotta animal, either a bull or horse, (see Pl. 94 No. 8: this is beyond doubt Neolithic and a humped bull. F.R.A.) a coarse grey spout, and a smooth red spout.

Munn visited the site after the discovery of the Asokan edict, and identified the now familiar Sultan Mohammed's field as a Mauryan town. He reported a considerable depth of deposit exposed in one of the rain nallahs in the field, and hazarded the opinion that this might be the site of Swarnagiri.

Of objects collected by Munn a small number has

been inspected by me. The majority are pot sherds of B2 or B3 ware and I date them Pre-Medieval A or B. Munn also found a number of fragments of terra cotta figures. Several resemble closely those from Kondapur, and thus may be linked with the Sātavāhanas. Two, however, are of an interest not realised by Munn himself, and have lain unpublished until this time. These are the hind-part of an animal, possibly a pig of buff ware, and the head of a bull, probably without hump. Both specimens appear to be of Neolithic 'A' wares. The latter is stylistically closely affined to the neolithic bull terra cottas from Piklihal. Both are illustrated (Pl. 94 Nos. 3 and 6). In 1935-7 the Hyderabad Archaeological Department carried out explorations and excavations. In the first season excavations were carried out in Sultan Mohammed's field where a number of 'furnaces' for smelting 'iron or gold' were discovered. In addition ornaments of shank and glass and a number of terra cottas are reported. Some of these are illustrated in the report,¹¹ and mainly appear to belong to the pre-Medieval period. Of particular interest was a terra cotta seal, No. 878, with an inscription in Andhra characters (Pl. —). A number of terra cotta grooved ear-discs suggest

similar dating.¹² Excavation has also been made at six sites in or near the Asokan edict cave. 4 of these sites were in natural caves. Here, as in Sultan Mohammed's field, a large number of microliths was discovered. The pottery from the cave sites was described as "of plain type" and "without glaze". It was rightly assigned to the Neolithic.¹³ In the list of finds from these caves¹⁴ there are also numbers of objects that indicate a post-neolithic dating. Thus Site I produced 85 pieces of green glass bangles, as well as shank bangles. Site VI appears to have produced only "flakes, perforated pottery, two fragments of tripod stands, and a pottery spout". These objects are all of Neolithic 'A' ware, types. The stands may be compared with one in the collection of Col. Gordon from a similar provenance (illustrated in Pl. 81 No. 76 below). And there is every reason to assign a similar dating. It is noteworthy that the majority of the sherds collected by Col. Gordon are of poor, ill-fired, fabric.

In the following season, further exploratory excavations were made at a number of other places. Of these the inconclusive brick pavement at Site 'M' is interesting for the discovery of a terra cotta "cylinder seal". The object has caused considerable discussion¹⁵ but this has added nothing to our

knowledge of this curious freak. Site L, Sūryanwāri, revealed extensive traces of brick structures and a stone well. Judging by the surface finds, this area is pre-medieval, as also must be the foundations around Site H. to the West of the Inspection Bungalow.¹⁶ This latter site produced three gold coins with lion and elephant designs. These have not yet been satisfactorily identified.¹⁷

Further exploration revealed the stone alignments to the W. of the hill, whilst cairn circle graves were reported one mile W. of the Edict (a search by the writer failed to locate them). Another find in the vicinity of Maski reported by the Department is of about 45 cairn circle graves and traces of stone foundations near the twin hills S. of Venkatapur hamlet.

In 1943 further excavations were carried out in Sultan Mohammed's field. The report on these has not yet appeared. The most important finds were a large number of burials of several distinct types. These are described in part and an attempt made to date them sequentially below (p. 171). They included inhumations, both extended and flexed, in one case in a coffin-shaped stone cist; burials of collected bones in terra cotta pottery cists (or sarcophagi); and burials of ash deposits in globular urns.

48. Matbal. Long. $76^{\circ} 37'$ Lat. $16^{\circ} 1'$. $1\frac{1}{2}$ miles W. of village. Munn JHGS II pt. 1. ARHAD 1935-6 Apx. A.

Munn reported megalithic burials on the summit of a small hill West of the village. He classified them as stone circles.

The later report refers to the finding of neolithic artefacts, iron slag and gold-crushers on the site.

49. *Mudgal. 1. Long. $76^{\circ} 28'$ Lat. $16^{\circ} 2' 15''$.
50. 2. Long. $76^{\circ} 27' 15''$ Lat. $16^{\circ} 1' 30''$.

Munn JHGS II pt. 1. ? ARHAD 1935-6 Apx. D.

Munn shows two sites on the geological map, but does not say more than that stone circles are found. The later report is even vaguer and does not state which, if either, site was visited, nor what, if anything, was found. (See below Chapters III and IV).

51. Nawalkal (Foote, Naulukal). Long. $76^{\circ} 58'$. Lat. $16^{\circ} 10'$. Foote IPPA p.123. ARHAD 1935-6 Apx. A. Munn PPF.

The top of the great rock must have been occupied for on the summit I found a number of flakes of interest. Also a grey coarse sherd with finger tip decoration, and a sherd of brown polished earthenware painted. I noticed an immense quantity of pottery at the W. foot of the rock but had no

chance to overhaul it. (Foote) (The grey sherd appears to be of a Neolithic A ware and type).

Munn noticed the presence of rock shelters on the summit of the hill, whilst the Department's report mentions the finding of artefacts.

52. Palcherla. Long. $77^{\circ} 44' 0''$. Lat. $16^{\circ} 15' 21''$.

Munn JHGS III pt. 1. p.80.

One mile East of the village is a group of more than 12 stone circles.

53. Patapalem. Long. $77^{\circ} 36' 25''$. Lat. $16^{\circ} 18' 10''$.

Munn JHGS III pt. 1. p.81.

Between Patapalem and Natampahad is a group of stone circles.

54. Patkandoddi. See Kurkundi.

Munn JHGS II pt. 1., and ARHAD 35-6 Apx. A.

(The ash mound referred to in JHGS lay to the north of the village in the direction of Kurkundi, and it appears that this mound is identical with that referred to in ARHAD 35-6 Apx. D. under that name).

55. *Peddapahād. Long. $77^{\circ} 44' 0''$ Lat. $16^{\circ} 17' 0''$.

Munn JHGS III pt. 1. p.80.

About 15 stone circles were noticed within half a mile WNW of the village.

56. *Rajalbanda. Long. $77^{\circ} 12'$ Lat. $15^{\circ} 58'$.

Munn JHGS III pt. 1. p.81.

A big group of stone circles about $1\frac{1}{2}$ miles ENE of the

village.

57. *Rodalkunda (Foote, Rawalkunda). Long. $76^{\circ} 46'$. Lat. $15^{\circ} 41'$. Foote IPPA p.126. ARHAD 1935-6 Apx. A.
The site is at the foot of the East slope of the hill. It must have been one of the great sites, although only slight traces remain, on the surface at the top, of the original habitations. Finds included a granite mealing trough, flakes of chert, agate and chalcedony, and a small quantity of pottery, including a red polished rim decorated with rings of impressed dots. Chank shell bangle fragments were also found. (Foote). (The potsherd illustrated in Foote, Pl. 34 seems to be Sātavāhana (pre-Medieval).
The later report contains no further information.
58. Sadapur. Long. $77^{\circ} 9'$ Lat. $16^{\circ} 0'$.
Munn JHGS III pt. 1.
A group of stone circles 2 miles NE of Sadapur.
59. *Sirwar. Long. $77^{\circ} 1' 15''$. Lat. $16^{\circ} 10' 30''$.
ARHAD 1935-6. Apx. A.
Artefacts were found on a hill one mile SW of the village (this is apparently the hill Bm 1562).
60. Tigari. Long. $76^{\circ} 1' 0''$. Lat. $15^{\circ} 18' 30''$.
Foote IPPA p.128.
Indications of a small settlement were found near the existing village of Tigari, but no object of interest is recorded apart from a core of red jasper

and a small muller.

61. Timapur. Long. $77^{\circ} 16' 15''$ Lat. $16^{\circ} 22' 30''$.

Munn JHGS III pt. 1. p.82.

A group of stone circles from which most of the stones have been removed is seen just North of Timapur and 2 miles SSE of Girijapuram (near the Kistna River).

62. Togalgudda. Long. $77^{\circ} 6'$ Lat. $16^{\circ} 12'$. BM 1302'.

ARHAD 1938-9 p.27.

East of Etnur (Ittanur) village. There is a small hill with caves and rock bruised engravings, including one of a maggar (crocodile) or lizard. Slag and pottery were found.

Totegal: see Anandgal.

63. Uperu (JHGS, Upri) 1. Long. $77^{\circ} 40' 14''$. Lat. $16^{\circ} 19' 41''$.

Munn JHGS III pt. 1.

There are more than 15 stone circles within a mile NNE of the village.

2. Long. $77^{\circ} 40' 49''$. Lat. $16^{\circ} 19' 51''$.

Munn JHGS III pt. 1.

About half a mile further NNE and one furlong from the Kistna River there are three stone circles.

64. Uppalapadu. Long. $78^{\circ} 12'$. Lat. $15^{\circ} 55' 30''$.

Information from Director of Archaeology, Hyderabad.

During exploration in 1952 a large group of stone cist circle graves was found E. of the village.

They are mainly without capstone, and are described as made of the local Cuddapah series sandstone.

A number have S. posthole.

65. Valkamdinne. Long. $77^{\circ} 14' 30''$ Lat. $15^{\circ} 59' 30''$.

Munn JHGS III pt. 1.

There is a group of stone circles 1 mile NW of the village.

66. Vampalli. Long. $77^{\circ} 40' 57''$ Lat. $16^{\circ} 18' 41''$.

Munn JHGS III pt. 1.

A few stone circles about half a mile to the North of the village.

Venkatapur: see Maski.

67. Wandalli. Long. $76^{\circ} 44'$ Lat. $16^{\circ} 13' 30''$.

Foote IPPA p.95. Munn ARHAD 1927-8 Apx. C. JHGS. II pt. 1. p.127, PPF p.240, et seq. ARHAD. 1935-6 Apx. A. Foote did not actually visit this site, but mentioned it as one of the Hyderabad cinder mounds found by Bosworth Smith. Munn measured and planned the mound, which he stated to have first taken for a deposit from a calcareous spring. It measured 300' x 200' x 50' in height (See Pl. 42b). The mound contained quantities of rubbing stones and mullackers. In JHGS II there is a photograph of the mound, Pl. XVIII. The Department's survey reports that artefacts were found near the mound.

68. Watgal. (Foote, Wuttugallu). Long. $76^{\circ} 45' 45''$ Lat. 16°

6' 0". Foote IPPA p. 124. JHGS II pt. 1.

ARHAD 1935-6 Apx. A.

On the Southern side of the fortified hill the fields show abundant signs of neolithic occupation. Finds included a fine series of celts, and a series of microlithic flakes and blades. There was little pottery and not much of interest, except the right thigh of a human figurine, greyish white in colour. (Foote).

Munn mentions neolithic rock shelters at the site. The Department's report speaks of finds of iron slag and artefacts.

69. Yergunti. Long. $76^{\circ} 26' 45''$. Lat $16^{\circ} 12' 30''$.

Munn JHGS II pt. 1. ARHAD 1935-6 Apx. A.

Munn reported the presence of an ash mound, whilst the later survey reported finds of flakes of chert and agate on the surface of the mound.

70 - 95. These sites are described in the following chapter as they were not reported before the present writer's exploration.

96. Sālgond. Three miles SE of Rodalkunda (q.v.) ARHAD 1936-7 p.8. Stone artefacts found.

97. Tāwageri. Long. $76^{\circ} 24' 0''$. Lat. $15^{\circ} 45' 0''$.
Munn, JHGS II pt 1 stone artefacts.

Key Work in Neighbouring Areas.

1. Meadows Taylor and the Classification of Grave Types in Gulbarga District.

Meadows Taylor's three papers on the Ancient Remains at the village of Jivarji; Notices of Cromlechs; Cairns and Other Ancient Scytho-Druidical Remains in the Principality of Sorapur; and Description of Cairns etc., of the Deccan¹⁸. contain some of the earliest and clearest descriptions of graves in the Deccan. As the graves in Raichur are closely linked with those described and as all subsequent analyses have been based in the main thereon, it seems appropriate to summarise his classification. A more recent survey of the area has been undertaken by the Geological Survey of Hyderabad, and an account of this can be found in JHGS Vol. IV pt. 1., (in particular pp. 156-161). It adds little to a typological analysis although it adds many new and important sites to the earlier work. The need for a sensible survey of at least the main sites covered by Taylor and the JHGS IV remains as urgent as ever, and few more fruitful fields of exploration can be sought in the whole of India.

Taylor¹⁹. listed the remains of the Deccan and Carnatic as:-

1. Cromlechs without circular enclosures. These he

defined as erections of large slabs of stones,
generally open at one side. (Type A).

1a. Cromlechs with circular enclosures. (Type A).

2. Kistvaens with or without circular
apertures in one monolith, containing urns filled (Type A).
with earth, bones, ashes and charcoal. These
were closed cromlechs but smaller as a rule.

The pottery was red and black.

3. Open Cists. (Type A)

4. Barrows as at Shahpur.

5. Cairns, with single, double, or treble
stone circles. (Type B1).

5a. Cairns with cists of stone below, con-
taining skeletons, weapons, urns and other
pottery. (Type B).

5b. Cairns without cists but urns filled
with ashes, bones etc. (Type B1)

6. Temple or large altar blocks surrounded
by a double ring of stones as at Shahpur. (Not met in Raichur)

7. Diagonal lines of stones or rocks, as
at Vaibāthalli. (Alignments).

8. Square platforms enclosing cairns, as
at Mandwalli. (Type D).

9. The large tumulus of Shahpur. (Combination of Type D
and Stone Rectangular
enclosure).

The terms adopted by the present writer have been given

above (p. 175), whilst the analysis of the Raichur grave types (the corresponding type is given in brackets after Taylor's description) is appended to the following chapter (p. 220f).

2. The Excavations of Krishna and Wheeler at Brahmagiri and Chandravalli.

It was Krishna who posed for the present generation the central problem of Indian archaeology, when he introduced his exploration and excavation at Chandravalli thus: "If the stories of Hastināpura, Ayodhyā, of the Aryans and Rāksasas have any historical foundation, then the relics of those times, or at least the indestructible dressed stones, metal ware and pot-sherds ought to lie hidden under the surface of India."²⁰ Thus for the first time was the task of archaeology in India of providing a material basis for the mass of traditional, mythological, historical, linguistic philological and not least literary material recognized. It is, indeed, a great credit to a scholar so much steeped in the 'traditional' approach that he was able thus happily to formulate the problem, and reject the preconceived viewpoints of the various schools of study enumerated above. Krishna was not himself primarily a field archaeologist: the extensive exploration and excavations he conducted at the two sites under discussion may now be seen to have left much to be desired: numbers of his conclusions are now seen to have been incorrect. These criticisms may stand, but the

fundamental rightness and truth of his approach remains, and could well be taken as one of the tests of the fruitfulness of any future archaeological research in India.

The contribution of Chandravalli and Brahmagiri to the materialization of the vague and often nebulous figures of history is considerable, both in the large scale work carried out by Krishna and the subsequent excavations of Wheeler.

Chandravalli takes the form of a triangular valley protected by hills on three sides. It was thus easily defended, and also favoured the use of ancient dams, and indeed there are four such in the Hulegondi gorge, one of which may be that referred to in the inscription of Mayūrasarman of the Kadamba dynasty. The area includes a number of caves in which were found brick-bats, potsherds, pottery crucibles, tuyeres, iron ore and slag, and stone pounders. Excavations near the central rock, on which is an engraved tiger, revealed a number of burials in stone cists, one of which included six elephantine feet. Close to these cists and often on a level with them were found a number of lead Sātavāhana coins, and a Roman silver coin of Augustus. At Brahmagiri²¹. Krishna postulated the following culture sequence:²².

1st layer Chalukya and Hoysala.

2nd " Mauryan

3rd " Pre-Mauryan Iron Age with polished black ware.

4th layer Neolithic.

5th " Microlithic.

Perhaps more important is the list of distinct types of pottery that he recorded.

1. Largish gourd-shaped pots with rough exteriors, relieve or incuse ornamentations on unpolished redware, along with them painted redware of about early Sātavāhana times. (? B3 ware).

2. Polished fine pottery, yellowish-brown outside and black in strongly resembling Mauryan pottery from Bhita and elsewhere. (C2 Rouletted ware).

3. Redware fine, some specimens painted with white lattice geometric and plant design. (B2 ware).

4. Tan ware pottery with designs in dark red.

5. Polished blackware with designs in white, also bicoloured. (B2 ware).

6. Well burnished pure blackware along with unpolished brown ware.

7. Polished pottery with multicoloured mottled ornamentation, red, yellow, black, blue.

Many of these types may now be recognized, and definitely associated with wares from other sites.

Such, briefly, was the outcome of Krishna's excavations, and on this basis, and with the knowledge of the similarity

of rouletted sherds from these sites with those from the 'Roman trading station' of Arikamedu, Wheeler set out to demonstrate the place of the Megalithic remains in the historic or prehistoric cultures of the region. The outcome was the first stratified evidence for the relation of the graves to a habitation area, and moreover showed for the first time the place of the neolithic polished axe and the microlithic blade in such a framework. The Sequence proposed by Wheeler was as follows:²³.

1. Stone Axe Culture. Distinguished by pointed butt axes throughout, associated with numerous crude microliths. Copper occurred rarely. The pottery divided into two sub-phases. The lowest stratum of the town site being termed IA included pottery of painted and incised sherds. The pottery of the remaining stratum, termed IB was for the most part of coarse hand-made grey ware. Burials were of two kinds. Child burials in urns of a uniform type. Adult burials were represented only by two instances. A child 8-10 years old, extended with head to the east, two earthen bowls at the middle and a spouted vessel at the head.

2. Overlapping with this first culture was a second one, described as intrusive, which introduced iron working and a new type of red and black, "slow wheel" turned, polished pottery. The vessels are characteristically black inside which indicates inverted firing. This pottery was found also in the megalithic graves from which the culture as a

whole was named.

3. The Andhra Culture, is characterised by a far more sophisticated ceramic, normally turned on a "fast" wheel. Wares included the rouletted ware, and a criss-cross painted, patterned, ware, sometimes "salt glazed", with rectilinear decoration in white pigment (lime or kaolin) under a wash of russet-coloured ochre. At Chandravalli, a numerous potin coinage was found associated with this culture. At both sites the first glass bangles appeared.

The excavations of Krishna had yielded very valuable evidence of Sātavāhana and Roman contacts with Chandravalli. Coin finds included two denarii of Augustus and three of Tiberius alongside numerous Sātavāhana coins. It thus seemed to Wheeler that it should be possible to relate these coins to the archaeological stratigraphy of the site, and for this purpose he excavated three trial pits in 1947. The result of this small excavation was only partly successful. The site did indeed yield a further denarius of Tiberius, but neither it nor the numerous Sātavāhana coins found seem to conform with any logical chronological sequence or sequence of strata. The excavation did, however, put these coins in context with local and imported pottery, and this fact will be considered critically below (p.556). It must suffice here to note that pit Ch. 43 yielded examples of the 'Andhra' painted sherds throughout excepting the bottom layer, whilst a distinction is made between 'megalithic' black and red sherds and 'Andhra' of a dull red ware. The

former were turned upon a 'slow wheel' the latter upon a 'fast'. With the latter group was found a bright red (C3) ware, compared rightly with similar finds from Kondapur and Kohlapur, and (C2) rouletted ware compared to the similar ware at Arākamedu. Wheeler noted that the 'Andhra' culture was intrusive, and was associated with the coinage and glass bangles. The pottery of the 'megalthic' ware was inferior to that of Brahmagiri and graffiti were missing.

A general criticism of this sequence and discussion of various features will be included below.

3. The Excavations of Subba Rao at Sanganakallu, and Explorations in Bellary District.

Subba Rao visited parts of Bellary district in 1946-7. He selected four areas for intensive exploration. These were (1) the area in and around Bellary town including the famous Kupgal hill; (2) Rayadrug and Brahmagiri area, roughly the Chinna Hagari valley; (3) the Nagaldinne area, being the NE corner of the district on the banks of the Tungabhadra, and (4) the Hāmpāsāgar area, west of the Sandur hills.

His final conclusions sometimes concur with, sometimes supplement and sometimes suggest divergence from the present writer's observations in Raichur. It is therefore expedient to consider the explorations as well as the excavations at Sanganakallu.

1. In the region of Bellary town a rock shelter at the foot of Fort Hill was found to contain large quantities of black and red ware.²⁴ Around the North Hill the writer comments on the traces of neolithic settlement on the top of the hill together with indications of iron smelting, whilst the made ground on the slopes, which was first noticed by Foote, is described as follows: "... as one sees the summit of the hill from the Fort Hill there appear three made grounds or plateaux running from right to left and separated by outcrops of boulders. There is an easy way leading from them to the foot of the hill and a spring - the Kumbaru Kunta."²⁵ To the north are the Sangankallu group of hills. The Sannarasamma hill has a large plain ground on top which contains good rock shelters.²⁶ The top of the Saudamma hill has a plain of made ground offering traces of slag. The Kupgal hill has rock shelters on the summit, and a kind of citadel. On the slopes are three lynchets, first mentioned by Foote, who reported them thus: "The traces of residence are very numerous in the shape of small terraces revetted with rough stone walls, and great accumulations of made ground full of ashes and broken pottery. Other traces of residence were small tanks made by damming up the little stream which drained the north side of the hill."²⁷ There are numbers of stone graffiti on the hill. Near the foot is the cinder camp I, around which Subba Rao reports large quantities of red slipped pottery.²⁸ Whilst along the foot of the slope are large

quantities of pottery which may have been washed out from the top of the hill.²⁹ The whole area Subba Rao describes as a "vast prehistoric settlement... one extensive site". There can be little doubt that the main cause of its siting was the very large dyke of diorite trap which cuts the hill and provided, as Foote first realised, the raw material for this extensive factory.

2. The Rayadrug and Brahmagiri area. The area within 5 miles radius of the town of Rayadrug was reported by Pelley to contain over 1000 megalithic burials, but no ancient settlements seem to have been noticed.³⁰ Longhurst described some of these graves.³¹ The Fort area of Rayadrug takes the form of two hills connected by a low saddle and like the North hill at Bellary, there is a vast plain ground on the top. There are still some houses occupied here, and Francis noticed that vegetable cultivation, watered from the tanks, still survives as a thriving industry.³² The description of the Brahmagiri hill area adds little to the previous reports.

3. The Nagaldinne area. This interesting area is described as a compact plain with few hills, bordered on the north by the Tungabhadra river. As it is contiguous with Raichur district it is of particular interest in the present context. The area has so far produced a large number of microliths but only two neoliths.³³ East of Nagaldinne itself is an area of made ground in the alluvium

of the river, surrounded by fields of black cotton soil. This area produced numbers of microliths as well as black and red and criss-cross painted pottery (of Andhra context at Chitaldrug).³⁴ Two miles east is a similar site, also on the banks of the river near the village of Gurjala. Yet another is located near Rayachoti.³⁵

4. Hampāsāgar. It seems that the habitation area of a largish settlement was located west of Hampāsāgar, also on the Bellary side of the Tungabhadra river.³⁶ The site produced large quantities of the criss-cross painted ware and microliths. A number of palaeoliths were also discovered nearby in the gravel bed of the river. This site is opposite the graves described first by Foote and further explored during the present survey (see below p. 22 *Hunkunt). Subba Rao concludes that the graves were associated with the settlement across the river.

5. The excavations at Sanganakallu.³⁷ (This section of Subba Rao's thesis is published separately). During the exploratory work in Bellary district, Subba Rao selected the top of the Sannarasamma hill (referred to above) as having a plain ground offering good prospects for excavation. Two trenches 8' x 12' and 8' x 18' were made. The resulting series of culture periods was distinguished.

Phase III containing red and black (Megalithic period) pottery alongside coarse brown and black, and burnished hand made pottery and polished stone axes and flakes.

Phase II Sub period 2. Coarse brown and black and a few sherds of pale grey ware, together with a few sherds with violet and purple painting and sometimes a dull red slip. A rich axe industry and a weakening microlithic facies.

Phase II Sub period I. The pottery is mainly pale grey, whilst the coarse brown sherds are in a minority. The axe industry is associated with a fine microlithic industry with blades and lunates blunted along the arc.

Phase I represented by the bottom layer of the site separated from the remainder by a 'thin barren layer', Contained a number of heavily patinated flakes of trap and sandstone associated with a crude microlithic industry. There is no definite evidence for the use of pottery.³⁸

Some sort of a critical assessment of this division will be attempted when the sequence is compared with the present writer's excavations at Piklinhal³⁹. The pottery and other finds will be compared with those from Raichur in the course of later chapters.

4. Excavations of the Hyderabad Archaeological Department at Kondapur (1941).

The Kondapur excavations are referred to in a recent publication as 'imperfect'. This is perhaps rather unkind, as the excavations there, in spite of certain defects, have produced much valuable material, though lacking a possibly

deceptive scheme of chronological certainties. Reference here must unfortunately be to Yazdani's brief report,⁴⁰ as full publication is still awaited.

The site is 43 miles WNW of Hyderabad, a short distance from the main Bidar road. Its geographical position is thus interesting as it is on the junction of the gneissic and trap regions. The mound on which the site lies is to a great extent natural, and it is difficult to gauge the total depth of occupation at any point. Around the mound flow two branches of a nullah, and the site is thus a near island. The fine dam in all probability owes its origin to Kākatiya times. The present village of Kondapur lies $\frac{1}{2}$ mile to the north.

Yazdani describes the structural finds as of burnt brick, the sizes varying from 22" x 12" x $2\frac{1}{2}$ " to 20" x 20" x $2\frac{1}{2}$ " and 17" x 8" x $2\frac{1}{2}$ - 3". Wedge-shaped bricks occur in the apsidal ends of chaityas and stūpas. The structures include shops with furnaces, houses with 'chaubaccha' storage pits, and remains of vihāras, chaityas and stūpas. Floors were of well-laid bricks or of crushed brick. Roofs were probably of burnt clay tiles, many of which were found. The Vihāra was best preserved in the north wing, where there were cells, whilst in the centre of the court was a stūpa of 19' diameter, built of brick casing and skeleton with rubble core. South of the vihāra were two chaityas with apse at the north end. The internal dimensions were 25' 4" x

10' 4" and 21' 4" x 12'. This group of buildings is decidedly reminiscent of those of Nāgārjunikondā described by Ramachandran.⁴¹ There were also 'ring wells' of terra cotta, and one brick-lined well.

The finds from Kondapur included an important collection of over 2000 coins. Of these Yazdani mentions potin coins of Śrī Sātakarni Gautamīputra, Śrī Pulumāvi Vāsishtīputra, Siva Śrī Pulumāvi, Śrī Yajna Sātakarni, whilst lead coins included 3 of Gautamīputra and 1 of Sātakarni. A gold coin of Augustus was also discovered. Of particular interest is the oval piece with elephant attributed by Dr. Rama Rao to one SātaVāhana, the founder of the dynasty, and to the 3rd century B.C.⁴² Sreenivasacar has demonstrated that there are serious flaws in this argument, and points out that in general, there is no reliable evidence for a B.C. dating for Kondapur.⁴³

The pottery included many stamped vessels, some with triratna. A special feature noted by Yazdani was the small cup form in fine (C3) red polished ware. Other finds included clay bullae,⁴⁴ bangles of ivory and clay,⁴⁵ and rectangular terra cotta amulets,⁴⁶ together with numbers of terra cotta beads,⁴⁷ and large numbers of terra cottas of both human and animal subjects.

As this account seems to neglect some points that appear to us significant it may be well to append some observations upon the finds and general dating considerations.

1. A number of finds of glass objects were made. These included several dark blue-green bangles, and a few with additional yellow enamel. They also included a discoid ear pendant of dark blue colour decorated with concentric circles.

2. Among structural finds were terra cotta finials of buffish ware. (Compare examples from Jaipur sites, Sambhar, Bairat, Raich, Kolhapur and Bhita).

3. There were numbers of bone styli (compare Kolhapur).

4. Finds included 10 poor neolithic axes of trap-dyke rock, and a few microlithic implements of chert and chalcedony.

5. Among the terra cotta figurines were large numbers of animal types (horse, ram, cock, lion, elephant bull). They all appear to be made of very fine creamy clay, sometimes with red polish, and to be slip-caste. A second group of terra cottas are solid and of coarse 'B3' ware.

6. The fine red polished ware of Yazdani included numbers of white-cream examples. The two principle forms are variations of the cup and the 'sprinkler' type of vessel frequently with an air passage in the side of the neck. The cups are sometimes further decorated with incised lines, but are almost all slip-caste and of a fine clay similar to that of the terra cottas. The sprinkler type has often

a very fine polish, and the neck being made separately and luted on to the body. The cup forms are perhaps reminiscent of the impressed decorations on bowls of undescribed base from Sambhar, which Sahni compares with large stone vessels in Mathura Museum.⁴⁸ A single example is reported in the excavations at Kolhapur.⁴⁹ An exhaustive distribution of red polished ware, and a typology for the finds in Gujerat is given by Subba Rao, who emphasises the essential Roman contact which lies behind the ware.⁵⁰

7. The curious cylindrical pot of red slipped ware (B3),⁵¹ appears to be a drum (Mrdanga) as also may be another example in the Kondapur Museum but not illustrated. (See below p.324).

8. The saddle querns of stone with legs, resemble similar finds from Kohlapur,⁵² Taxila,⁵³ Rairh,⁵⁴ and Adichanallur.⁵⁵

9. Pottery - general. There are examples of rouletted ware, and also of a variation with spiral finger painting on thick black treacly-surfaced bowls.⁵⁶ The so-called 'Andhra' painted ware is quite rare. Small open cups of coarse pink ware are common. Coarse red-pink wares are by far the most numerous. Decoration with stamped or applique designs are common, and resemble those from Nāgārjunikondā. There is also a fine delicate variety of the pink-wares in which numbers of small vessels occur. Typical lids of the Sisupalgarh type are frequent. There is a considerable quantity of red and black polished ware. A

curious vessel (~~Pl. — for sketch~~) has some resemblance to part of one from Chandravalli.^{57.}

10. A decorated ivory 'Holder' (?) resembles a similar one from Rairh.^{58.}

11. The iron rivetted pottery has been assigned by N.P. Chakravarti to the 2nd century A.D.^{59.}

5. The Excavations of Wheeler and Casal at Arikamedu. ^{60.}

In stating the importance of the excavations at Arikamedu, Wheeler wrote: "the Arikamedu excavation of 1945 was almost the first occasion on which the normal principles of modern archaeological field technique have been applied in South India." The result was to provide a series of cross dating points for local objects with dateable Roman or imported materials. It is not our intention to do more than summarise the data that relate to the problems of Raichur. The wider issues of western contact and of the origin and affinities of certain ware (for example the "rouletted") will not be discussed. Wheeler's chronology is accepted as the best evidence yet available in Southern India, and the significant material will be considered against its setting. Accordingly the 'northern sector' was occupied for about the first half of the first century A.D. whilst the southern sector was occupied from about the end of the first half of the first century

until the end of the second century. It may be noted that buildings of burnt brick and pottery ring-wells occur in both sectors. Sherds of amphorae, of undisputed Mediterranean origin, occur throughout the site in all significant layers. The important Arretine wares - including several stamped sherds - Wheeler dated as A.D. 20-50,⁶¹ and used this ware as the key to all other pottery finds from the site. The so-called "rouletted ware" which Wheeler suggests to be an importation of the decorative style from the Mediterranean, whilst noting that "it is not yet possible to ascertain whether the type itself is of similar origin" occurs also throughout the site, with its distinctive tray-bowl form. It is, however, the 'local ware' that, reviewed against the time scale of the Arretine, makes a most interesting comparison with the ware of other southern sites. Wheeler recognised (at least partly) the importance of this comparison when he wrote of the Chandravalli pottery: "the overlap of the two cultures (the 'Megalithic' and Arikamedu) and the equation between this evidence and that of Brahmagiri and Chandravalli is in this respect absolute."⁶² Wheeler sought to support evidence of the identity of fabric at these sites by identity of form, and here found that "specific resemblances between the types are slight and cannot be regarded as significant". It will be shown that there are indeed many forms, as well as slight variations in wares that are common to the sites. This will be discussed in connection with the Raichur wares. (p. 315f)

Wheeler describes the local wares in the following way:^{62.}

"A small percentage of the Arikamedu pottery was subjected to inverted firing..... As a result the whole of the interior and a part of the exterior (usually the rim) turned jet black, and the remaining outer surface became red under oxidizing conditions and grey under reducing.. For the sake of brevity we shall refer to the former as black and red and the latter as black and grey ware. The effect was strikingly picturesque if the pots were treated with a slip and salt glazed in course of firing (see note below p.305), a feature which is characteristic of the Arretine period."

"For purposes of classification the local pottery is divisible into two broad groups, the first coming from the northern sector, and the second from the southern. The wares of the earliest layers of the N. sector are predominantly grey with a sprinkling of red wares mostly painted with haematite or bright red slip. In later deposits of this sector, there was a progressive increase in the quantity of red until it assumed parity with the grey, and finally outnumbered the latter in the top layer. In the S. sector, a crude type of pottery overwhelmingly red in colour is predominant."

v Wheeler further noticed certain comparisons of types with those of northern India. Thus he noted that the open dish of Arikamedu (type 2) resembled not only in form, but also sometimes in fabric that of Ahicc^hatra, while type 12

111

was identical with the open 'cup' type from Ahic^hcātra and Maholi.⁶³.

The same report appends notes on the so-called 'salt glaze', black slip with lustrous finish and haematite slip. These notes will be critically considered with the pottery technology of Raichur District (below p.291f).

The excavations of Casal⁶⁴ added new lower limits to the site, whilst generally confirming Wheeler's conclusions. In the Group I sites, to the south and south-west of Wheeler's southern sector, Casal found consistent traces of a pre-Roman occupation in which the only pottery was the red-and-black, 'megalithic', ware. The ware was not accompanied by burnt brick structures, and these only occurred in later levels where red-and-black wares occurred side by side with rouletted. Casal concludes that the site was established as a fishing village on the river banks before all contact with the West. Finding a mean thickness of these pre-Roman layers of 70 cms., he concludes that the establishment may have been in the course of the second century B.C. This conclusion re-enforces to a remarkable extent the general theory of Wheeler, whilst it adds little to the discussion of external and internal influences in the development of the site in the period of Roman contact. The whole problem of the chronology and culture sequence at Arikamedu will be discussed in its relationship to Raichur District (below p.565f).

CHAPTER II: NOTES AND REFERENCES

1. J.B.B.R.A.S. Vol. IV, 1852.
2. Foote, I.P.P.A. Ch. XIX, p. 122 ff.
3. H.A.S. 1, 1915.
4. H.A.S.10, 1937.
5. J.H.G.S. II, III and IV pt.1.
6. A.R.H.A.D. Various years.
7. Munn, L. J.H.G.S. II Pt. 1. Pl. XX, Nos. 36-9.
8. Munn, L. ibid Pl. XVIII.
9. I.P.P.A. p. 91.
10. Munn, L. P.P.F. p.250.
11. A.R.H.A.D. 1935-6. Pl. IVb, VI etc.
12. ibid Apx. c.
13. " " d.
14. " " u.
15. For example: Piggott S, Antiquity, 1944, pp.98-9.
16. A.R.H.A.D., 1936-7 pp.14-15.
17. ibid, p.78.
18. Originally published in J.B.B.R.A.S.III 1851, IV,1853, and T.R.I.A. XXIV Pt. III 1862, but now reprinted as Collected Papers, H.A.D. 1941.
19. ibid, p.75-6.
20. A.R.M.A.D. 1940 and 1942.
21. A.R.M.A.D. 1940 p.71.
23. A.I 4 p.199 ff.
24. Subba Rao, loc. cit. 1949 p.60.

25. ibid pp.61-3.
26. ibid p.28.
27. Foote, B. J.R.A.S.B. LVI. Pt.2, p.269.
28. Subba Rao, ibid p.72.
29. ibid p.73.
30. ibid p.78-9.
31. A.R.M.A.D. 1912-13, p.42.
32. Francis. Gazetteer of the Bellary District, p.297, Subba Rao, ibid. p.88.
33. ibid p.92.
34. ibid p.93.
35. ibid pp.94-5.
36. ibid pp.95-8.
37. This section of Subba Rao's thesis is now published separately as "Stone Age Cultures of Bellary", 1948, and the following references are to it.
38. ibid pp. 9-11.
39. See below Chapter XI.
40. Yazdani, G. Excavations at Kondapur, A.B.O.R.I. XXII, 1944 p.171 ff. Full publication is still awaited.
41. Ramachandran. I.H.Q. Jan. 1952.
42. Dikshit, M.G. Some Beads of Kondapur. H.A.S.16 with An Introduction by Sreenivasachar. p.iii; Also Rama Rao, M. Glimpses of Dakkan History, 1951 pp.21-2.
43. Dikshit, loc. cit. p.iv.
44. Yazdani, loc. cit. Pl. XI.
- 45, 46, ibid.
47. ibid Pl. XII.
48. Sahni, D.R. Excavations at Sambhar, 1936. Pl. IX, p.52.
49. Sankalia, H.D. and Dikshit, M.G. Excavations at Brahmapuri (Kohlapur), 1952. Type 73a and also p.61. The ware is rightly regarded a luxury import at this site.

50. Subba Rao, loc. cit. 1953. pp. 56-64. Since writing this section of Chapter II, a careful examination of fragments of this ware discloses that the term 'slip caste' is not correct. The objects appear to be moulded. See below p. 312.
51. Yazdani, loc. cit. 1944, Pl. III.
52. Sankalia, H.D. Ancient and Prehistoric Mahārāstra. J.B.B.R.A.S. XXVII Pt. 1.
53. Marshall, J. Taxila; 1951. Vol. III, Pl. 140, e, f, h, i.
54. Puri, T.N. Excavations at Rairh, 1938-40. Pl. XVIII.
55. Rea, A. C.P.A.
56. Compare AI, 4. Pl. CXXIII from Chandravalli.
57. ibid. Fig. 29, T. 181.
58. Puri, loc. cit. Pl. X.
59. H.A.S. 16. Pl. V.
60. Wheeler, R.E.M. AI, 2. 1946; Casal, J.M. Fouilles de Vīrampatnam (Arikamedu) 1947-8, Paris, 1949.
61. AI, 2. p. 35.
62. AI, 4, p. 274.
- 62a. AI, 2. pp. 50-53.
63. ibid. p. 93.
64. Casal, loc. cit.

C H A P T E R I I I .

EXPLORATIONS CARRIED OUT IN
CONNECTION WITH THE PRESENT SURVEY

CHAPTER III.EXPLORATIONS CARRIED OUT IN CONNECTION WITH THE
PRESENT SURVEY

In this chapter are given reports of sites visited by the present writer. These will be first listed briefly, and then described in detail in rough geographical grouping where this appears desirable. Thus in the second section under 'Benkal Forest' no less than eleven prehistoric sites are described, together with some observations on medieval remains. These sites have been listed separately in the first part of this chapter and in the preceding chapter.

In the following list, sites previously reported will be given without map reference and marked with an asterisk (*).

The sites are numbered consecutively, continuing from those of the previous chapter. Those which have already been mentioned retain their former number. After the sites in Raichur District, a brief description is given of one site outside the District, having obvious connections with sites inside the district, and not previously noticed.

1. List of Sites Visited during present Tour, and short notice of finds.

70. Anegundi. Long. $76^{\circ} 30'$ Lat. $15^{\circ} 21' 30''$. p134
Post-neolithic cave habitation and circle graves.
71. Basapatna. Long. $76^{\circ} 28' 30''$ Lat. $15^{\circ} 26' 15''$. p538
Medieval with (?) circle graves.
6. *Benkal Forest. p123
Rock paintings, cist graves and (?) habitation site.
72. Benkal Forest - Halekumala Track. Halekumala: p532
Long. $76^{\circ} 22' 30''$ Lat. $15^{\circ} 22' 30''$.
Medieval village sites.
73. Bilebhāvi. Long. $76^{\circ} 19' 15''$ Lat. $15^{\circ} 22' 30''$. p129
Cist graves and (?) habitation site with dam and well. Cave painting.
7. *Billar^mayan gudda. b178
Neolithic, post-neolithic and medieval settlement.
Circle and cist graves.
8. *Chik Benkal. p127
Circle and cist graves.
10. *Chinna Chintadura. p154
Circle graves.
11. *Darūr. About 2 miles east of. p155
Circle graves.

74. Darūr. Near 7 miles 5 furlong stone from Gadval on Gadval-Raichur Road. (Perhaps this site is that described in List 1 above (p.69) as 'Devampalli', although the actual site is less than half a mile from the village and the number of graves also differs).

Circle graves.

p156

75. Gadval-Darūr Road. Long. $77^{\circ} 46'$ Lat. $16^{\circ} 14' 30''$.

Circle graves.

p157

15. *Gadval - Latipur track. (See also Jamshed below).

Three groups of circle graves, two with traces of buildings. Stone alignments.

76. Gangāvati - Ginigera Road. Long. $76^{\circ} 19' 15''$ Lat. $15^{\circ} 24' 0''$.

p132

About $1\frac{1}{4}$ miles NW of Bilebhāvi village, near the 94 miles 3 furlong stone.

Circle and cist graves.

77. Gonpahād - Peddapahād track. Long. $77^{\circ} 43' 30''$ Lat. $16^{\circ} 15' 0''$.

p158

Circle graves and (?) habitation.

23. *Hire Benkal.

Circle graves.

p129

78. Hulihaidar. Long. $76^{\circ} 23' 0''$ Lat. $15^{\circ} 39'$.

p246

$1\frac{1}{2}$ miles north on Mudgal Road (35 miles 6 furlong

stone).

Grave site.

79. Hulihaidar. $\frac{1}{2}$ mile south on Gangāvati Road. p216
Grave site.

25. *Hunkunti. (Hankunti). p212
Cairn grave site.

80. Jamshed. Long. $77^{\circ} 50'$ Lat. $16^{\circ} 13'$. p146
(See also Gadval-Latipur track).
Stone alignments, and post-neolithic and medieval settlement.

81. Jilingeri. Long. $77^{\circ} 29' 15''$ Lat. $16^{\circ} 7' 30''$. p160
1 mile N. of village.
(?) Circle graves.

82. Kakulvaram. Long. $77^{\circ} 45' 15''$ Lat. $16^{\circ} 10' 30''$. p158
Circle grave site.

83. Kanakgiri. Long. $76^{\circ} 25'$ Lat. $15^{\circ} 34'$.
Medieval.

30. *Kallūr. p202
Neolithic, post-Neolithic, Sātavāhana and Medieval settlement.

32. *Karatgi. p207
Pre-Medieval (? Sātavāhana) and Medieval settlement.

35. *Kavitāl. p206
Neolithic type artefacts, and pre-Medieval and

Medieval settlement.

36. *Kopbal.

p187

Post-Neolithic settlement with cist graves. Rock paintings. Sātavāhana and Medieval settlement.

84. Krishna Bridge. $\frac{1}{2}$ miles SW. of and $\frac{3}{4}$ mile W. of Dev-sugūr village. Long. $77^{\circ} 20' 15''$ Lat. $16^{\circ} 22'$.

Microlithic factory site. Stone alignment, and circle graves.

p216

41. *Lingsugūr (Cant.)

p183

Circle and cist graves.

49. *Lingsugūr - Mudgal Road. (Above Ch. I Nos. 49 & 50).

50. Cist and circle graves.

p177,8

85. Madnakal. Long. $77^{\circ} 41' 30''$ Lat. $16^{\circ} 7' 30''$.

p158

(Perhaps the same site as that referred to above Ch. I No. 43).

Circle graves and (?) habitation.

44. *Mallapur.

p134

Circle graves and Medieval.

86. *Mānvi.

p196

Pre-Medieval and Medieval settlement.

46. " North of hill.

"

(?) Post-Neolithic habitation.

47. *Maski.

p164

Neolithic, post-Neolithic, Sātavāhana and Medieval settlement.

Stone Alignment. Rock bruising and paintings.

87. Maski-Lingsugūr Road. Long. $76^{\circ} 36'$ Lat. $16^{\circ} 3' 15''$.

p175

Microlithic factory site. Cist and circle graves.

88. Morigudda. S.E. of Koratgi a line of Dharwar outcrops.

No antiquities.

- Mudgal. See Lingsugūr-Mudgal Road above, Piklihāl below.

90. Nirmānvi. Long. $77^{\circ} 6'$ Lat. $16^{\circ} 2' 30''$.

p211

Pre-Medieval settlements. Circle graves.

55. *Pedda pahād.

p159

Circle graves.

91. Piklihāl. Long. $76^{\circ} 26' 30''$ Lat. $15^{\circ} 59'$.

p237

Neolithic, post-Neolithic, pre-Medieval and Medieval settlements. Stone alignments, circle and cist graves. Rock bruising and paintings. Slag and ash traces.

92. Potanhāl. Long. $76^{\circ} 53' 30''$ Lat. $15^{\circ} 55'$.

p210

Pre-Medieval settlement.

56. *Rajalbanda.

Circle graves.

p161

57. *Rodalakunda.

p199

Neolithic, post-Neolithic, pre-Medieval and Medieval

settlement.

93. Shivapur. Long. $76^{\circ} 21' 30''$ Lat. $15^{\circ} 20' 15''$. p136

North site. Cist and cairn graves.

94. " South site. Cist graves. Post-Neolithic, pre-Medieval and Medieval settlement. p138

59. *Sirwar.

Pre-Medieval and Medieval settlement. p205

- Timmapur. Same as Rajulbanda.

66. *Vampalli.

Circle graves.

Sites Outside Raichur District.

95. Gudabelūr (Godbellur). Long. $77^{\circ} 23' 30''$. Lat. $16^{\circ} 24' 45''$.

Alignment, squarish platforms. p218

2. Detailed account of Explorations carried out.

I. The Benkal Forest Area.

In the south-western corner of Raichur district there is an area about 12 miles square of hilly country. It is bounded on the south by the Tungabhadra river and a strip of flat alluvial ground of irregular width, which still retains the system of canal irrigation, that can be traced also on the other side of the river and is generally

remembered as the work of the rulers of Vijayanagar. This irrigated land is at places almost swampy, and must anciently have been liable to flood. It is at present the main source of the sugar cane and rice crops of the district, but today insufficient cleansing of the canals has multiplied the malarial mosquito and many of the older inhabitants of Anegundi complained of the disease sapping the life blood of the town. Depopulation in the past fifty years is well attested by the whole group of decaying houses in Anegundi. North of this strip is the wild forest region, conforming in general to the thorn forests described above (p.53f). This is cut by a long valley, about one mile in width, which runs east to west and carries the modern road from Raichur to Ginginera. The forest area N. of the road is notorious for its cheetahs and panthers, and is named on the Survey map the Agoli (or Algoli) forest. The region of the present survey was mainly confined to the southern portion. (PL 16 a, b)

Apart from the valley, the region is a backwater, barring communication in any direction. Of the dozen villages contained in it, all save deserted ones lie in the plain around the valley or the riverine strip. The significance of certain of these deserted villages will be considered below (p.532). The interior of the forest can have changed very little since ancient times and the thorn trees give place here and there to grassy clearings. Near

Shivapur, date palms flourish in the beds of natural water-courses, but there is no trace of any large-scale clearance or cultivation.

The forest first received attention when Keis visited two sites (Nos. 6 and 44 above) and wrote describing them to Meadows Taylor. Since that time the main site (No. 6) has been further noticed by the Archaeological Department of Hyderabad and by Munn, whilst the latter discovered two new sites (Nos. 8 and 23) of graves nearby. No report, however, survives of the discovery of any contemporary settlement. Keis further mentioned hear-say of two more groups of graves, one to the west of Anegundi and the other near Yemmiguda. The present survey discovered among other sites one that may well be the first of these, but the latter site was not found, although the area around Yemmiguda hill was explored, and yielded no remains other than medieval.

Site No. 6.

The site lies on the flat plateau, about 300' above the valley. It is in a region of scrubby forest which today is almost dry, although for some time after rain the tank mentioned by Munn holds water. At present the region is traversed by woodsmen gathering timber and brushwood, and goat-boys who take their herds of goats and cows to the forest daily. These visitors come mainly from the villages of Hire and Chik Benkal. The graves are still known to the

villagers as 'Mori māne', (dwarf houses).

Approaching the site from the north, traces of made ground and terraces are to be noticed at the top of the scarp, and quantities of much comminuted pottery of red-and-black (Bl) ware were found on them. These were at a distance of more than $\frac{1}{4}$ mile from the grave site, and possibly provide evidence of a settlement. It may be noted that at the foot of the scarp there are traces of a number of drainage tanks across the little valleys cutting it, and although the only one of these of any size almost certainly is not more than five centuries old, such a water supply would have been available anciently. The plateau comprises three main types of natural feature: outcrops of gneissic boulders; exposed faces of gneiss rock; and a thin sandy soil-covering giving rise to grass, scrub and thorn. The graves exploit all three types of surface, and adapt themselves accordingly, as becomes clear from the illustrations. The question must be faced, has there been any substantial change in the configuration of the area since the graves were erected? Perhaps the only possible answer is that very little change can have taken place. It will become abundantly clear that many of the graves were built upon the very spot from which the slabs of gneiss had been detached, by the fire-setting and wedge method, and that this beyond doubt brought about slight local erosion. It seems, however, that otherwise the forest offered just such a prospect as today.

The present survey distinguished about 440 graves, including numbers of cairns of small stones of insignificant proportions. The finest specimens are those lying to the South, in the proximity of the tank (which as Munn noted had been artificially enlarged by excavation and building up the northern side to form a bund (band)). In this group there are about 160 graves. The great majority are cists built on the solid rock. A minority have port holes, (Pl. 19 a) whilst some use a corner of the side slab chipped away to form a rough quadrant, evidently in place of the port hole. (~~Pl. —~~) There seems to be little attempt at orientation either of port hole or cist : there being about equal numbers facing north, south-east, south-west, and odd examples of north-west, and east. Typical examples are shown in photographs , and in measured drawings (Pls. 17-19). Traces of entrance passages or cover slabs for port holes were very rare. Also in this area were two graves in a crevice beneath a large boulder. These had walls of small blocks of stone built along the open sides. A few graves of the first type had around them low walls, circles or in one case squares, of small blocks of stone of startling rectangularity and reminiscent (though above ground level) of graves excavated by Wheeler at Brahmagiri. In the square example, particularly, the effect is much that of a courtyard around a house. It is not, therefore, surprising that the villagers insist that this was a village for the living, and point out the main bazar. The total

size of this first area is about 200 by 100 yards.

The second area lies slightly lower and to the north of the first. It occupies about as much space as the first and includes about 180 graves. Very few are of such dimensions as the cists of the first area. The majority are not on the bare rock, but dug in the sandy soil and generally without capstone. The tendency of these cists as of those of the third area, is to extend in length until they take on coffin-like dimensions. These cists are further very frequently compartmented into two, or even three, such sections: of those observed, the majority are double, fewer are single, and a yet small group consists of triple, whilst one at least is quadruple. Two examples were noticed in which a single cist lay beside a double. (Pls 19,2 and 21,1)

One group among the graves which occur on the bare rock (predominantly in the third or north-western area) forms a distinct class (that will be noticed at other sites). In this the essential feature is that a slab (of about 5 feet square) is detached from the bed rock, and raised, first at two, and then at four corners, on pillars built up of flat or squared slabs. Sometimes the wall spaces then left have been filled in with other blocks, but often a 'window' has been left in all four walls. The capstone is thus seen to be in situ. In the two latter areas a final type of grave, appears to be little more than a cairn of stones. It is not clear whether such a cairn contains

any cist. (Pl 21, 2 and 3)

A remarkable feature of the cists built upon solid rock is that the majority of them have a smaller floor slab inserted. This sometimes itself rests on small stones at the corners.

The site has produced very few surface finds. The exact locality of the finds of red-and-black painted (B2) ware is not clearly stated in any published report. In one of the cave graves of the first area, I found, in a pile of dust in one corner, fragments of two nearly complete bowls of fine well-burnt red-and-black (B1) ware. One of these had a 'mark' of a well known type incised on the surface after firing (Pl. 64). Together with these sherds was a single discoid bead of etched carnelian.

About half a mile from the grave site I found two stone circles, about twenty feet in diameter, on a sandy plain. In both cases there were visible traces of cists on the surface of the ground.

Site No. 8. Chik Benkal.

The site, which was first noticed by Munn, lies about $\frac{1}{2}$ mile north of Site No. 6. It is directly at the foot of the scarp, on the stony ground that flanks the modern cultivation, and some of the outlying graves have in fact been almost obliterated by ploughing. The larger group of graves lies to the east near the path leading up to site 6. Here

there are remains of about 40 graves, apparently all with cists, and a very small minority (surviving), with additional circles. Nearly all are much disturbed. They were excavated in shallow pits and only the upper parts of the cists exposed. One perfect specimen measured only 2'3" x 1' 8", whilst another was even smaller. The slabs are of much the same thickness as those of Site 6. The longest side slab I could locate measured 4' 3", and there were traces of granite chips surrounding the original cist. About 400 yards west there lie two or three stone circles. One of 13' diameter, whilst the largest had a platform 45' square, built up about 9" above ground level, and made of small stones. Inside the square were two large circles of gneissic boulders up to 3' in length. The outer circle had a diameter of about 40', the inner of about 30'. Within the inner circle was a paving of rough stones of 6" - 9" size, and finally in the centre without any trace of an orthodox cist, an eccentric circle of small stones 4' x 5'. Exploration for some half mile in each direction along the scarp revealed no further graves. To the west, however, there was in one field a small quantity of much comminuted pottery, including red-and-black ware. It is not possible to say whether this was washed down from the hill top or the remains of further graves now ploughed out, or even of a village settlement.

Site No. 23. Hire Benkal.

I could only locate a single circle grave to the east of a little hillock about one mile north of site No. 8, and $\frac{3}{4}$ of a mile west of Hire Benkal village. I did not visit the ash mound reported by Munn to the north of the village. The grave lies close to the track and several hundred yards from the main road.

Site No. 73. Bilebhāvi.

Until the present survey, Site No. 6, which has been described above, was a unique example with no comparable site known in the immediate vicinity. In the course of this survey, however, two types of complementary site were found. The first is No. 73.

Whilst passing the village of Bilebhāvi, I enquired for any "Moria māne" and also about the centre of the forest. I was delighted to be told that there were some nearby, and accompanied a guide to the site. This lies about 1 mile north-east of the village, on a stretch of level ground about 300' above the plain. The approach is via a short shallow valley, and at the foot (immediately below the site) is a large bund and slope catchment tank. This was dry when visited (May). I searched the area of the tank for any remains but found nothing, but there is reason to associate the bund with the Medieval period. As at Site 6, however, this does not preclude the possibility

of it superceding more ancient works. The bund itself is built with a core of stone boulders.

Climbing the hill behind the tank to about 200' feet, one reaches a series of natural terraces and little plateaux, which rise for about a further 100'. On these terraces are numerous traces of ancient activity and areas of made ground. Finally the main site appears. Here I was able to trace the remains of no less than three small surface drainage tanks, designed to include small areas of the plateau. The construction of the bunds was of particular interest, as the inner face seemed to be lined with slabs of thin gneiss which I estimate were originally about 3'6" in height. (Pl. 20⁶ and 21⁵). Backing these slabs was a mass of small rough stones, now grown with turf. My guide informed me that the houses were the remains of a village of mori (dwarfs) of about a cubit in height, With goats and cattle of corresponding size. The tanks (which were, at the time of our visit, dry) were for the watering of the cattle. About two hundred yards south-east of the tanks there is a well scooped out of the sand. My guide insisted that I should taste the water, which he said remained throughout the year, and which I found to be sweet. Close beside this well, in the undergrowth, I found what appeared to be the circular stone coping of a lined well, now filled with silt and forgotten.

On the bare rocks behind this plateau are about 80

'moria gudda' of dwarf houses. There are very few that are built in the soil. They are all smaller than the large examples from the Site 6 area 1, and conform to the type described in which the capstone has been raised on the very place of quarrying. (Pl. 20a) In many cases, here, it is supported merely by the four corner pillars of flat stone slabs. Those that have walls built of thin stone 'blocks' of surprising regularity of form and size, seem in a majority of cases to have had a south entrance. The capstones are usually roughly circular, tending to square, with a usual thickness of 4" - 6" and the largest are about 8' across, whilst the majority are 4'-5'. The usual height from the bed rock is not more than 1'9". Nearly all the graves had stone floor slabs 2"-3" thick and measuring on the average 2' 6" x 3' 6". The floor slabs in some cases rested on small corner stones, suggestive of the legs of a bed. I saw at least one cist built up of the more usual four slabs but buried in the sandy soil. I found no trace of any bones, pottery or other objects in the graves. (Pl. 21, 4)

There are a number of caves in the vicinity. One with patently modern paintings in ochre and white-wash. My guide told me that much damage had occurred during his lifetime, and pointed to a large bare rock-shelter with the remains of a fallen wall of stone blocks as an example. I was again unable to find any surface sherds. From another group of caves and rocks, I found a few sherds, but such as

were identifiable seemed to be recent, and probably traceable to goat-herds, etc.

There is, however, no trace of any extensive settlement on the plateau, and my guide told me there was no further interest in the hills beyond. Nor is there any trace of habitation in the region of the tank at the foot of the hill. It may be noted, however, that Site 76 is less than 1 mile distant, on the plain, and these two grave sites, apparently of similar age may be related to a common settlement not yet found. On the plateau near the graves is a rock with a crude carving of Hanumān to whom my guide insisted on paying homage as we passed.

Site No. 76. Gangāvati - Ginigera Road.

This site (as noted above) lies in view of the Bilebhāvi site No. 73. There are the remains of about 35 graves scattered on both sides of the main road, and a little to the west of an isolated hillock. They are on the plain as the road emerges from the western limit of the Benkal hills. The ground has a general slight western slope. The site lies on a main road, and for this reason, in recent decades, has met with the attention of the stone waddar, against whose destructive works Foote and Munn fulminated.¹ It appears that originally all had cists built below the level of the ground, and today protruding some 9" - 18". The granite slabs are throughout of splendidly even cleavage,

and resemble closely those of Site 6. The cists are, in all cases in which it was possible to measure, oriented on a north-south line, tending to vary from $5-10^{\circ}$ west of true north. In none was a port hole visible. The swastika plan appears in a few cases, the majority are simple. The largest I could find were two of over 4' square, inside cairn circles of about 40' diameter, whilst others I measured range from 3'6" x 4'6" down to 1'6" x 2' 6". In only one case could I observe visible evidence of an entrance way. In the one case (verging on a road-maker's pit) the entrance had clearly been southern, although the cist had gone. In no case did a capstone survive, but at a number of places by the road side, there were fragments of broken slabs of granite varying from 4" to 8" thick, and I believe that these were the remnants of destroyed capstones. In no case, also, was there any trace of a circle of large stones around the cist, which was built up with a surrounding cairn of small pebbles (of about 1" size). It seems impossible to say whether the circles may have existed and been removed, or whether the graves originally had only cairns. The cairn diameters vary from 20' to 45'. The pebbles are in part of granite, but the majority seemed to be of chips of dolerite.

One of the road maker's pits yielded a few sherds of red-and-black (B1) ware and a piece of a broken granite rubbing-stone.

Site No. 44. Mallapur, on the road to Timmapur.

Keis mentioned a site as being near Mallapur itself, with twenty to thirty dwarf houses. It seems probable that he referred to a site now located about one mile NE of Mallapur village on the road to Timmapur. It lies at the foot of a steep scarp, on the south-eastern extreme of a hill. I could discover in all thirteen graves. 7 were cist circles with cairns and circles of boulders, and six were stone circles, some with cairn, but in no case showing any sign of cists. One was a triple circle about 30' in diameter with the two outer rings of smaller stones (about 9"-12") and the third of more usual boulders. The site lies on both sides of the new canal service-road, and has suffered damage from the road-makers.

Site No. 70. Anegundi.

It has been found necessary, for the sake of brevity, to limit the discussion to pre-Medieval remains.

Just inside the outermost gate (the 7th) on the main exit from Anegundi (on the modern road to Gangāwati - it appears that the road originally branched north and passes west of Gangavati) there is a little plain at the foot of a rocky hill, and there are the remains of three or four small mandapas of stone, and platforms for other mandapas. These are clearly Medieval, but my informants in the town knew nothing of them, saying that perhaps there was here some temple, "but we do not remember anything of it."

Alongside these remains and $\frac{3}{4}$ of a mile from the town, the

ground yielded many red-and-black ware painted (B2) sherds, particularly to the west of the road where it had been disturbed by the Medieval fortifications. To the east of the road is a group of about 10 graves, simple circles tending towards oblong or rectangular shape. The stones are of usual size, and the circles average 16' in diameter. In several cases a cairn of earth and rock chips remains in the centre, but no trace of cists is visible. From the surface of one of the graves, further sherds of red-and-black (B1), and painted red-and-black (B2) ware were recovered. To the south of the graves, and near the mandapas there are traces of terracing, as for fields, and here one or two rough monoliths of stone are to be seen standing or lying. It is tempting to see in these the last remains of an alignment. The whole of this plain seems to have been anciently a terrace, as it is well above the level of the ground outside the defence wall (which probably was built on the line of the earlier terrace). To the north-east of the graves the rocky hillock contained an extensive series of large natural caves (the second largest such system I have seen in the district). In the course of a brief examination these were found to contain a Kannada inscription and some little human figures in a white-wash (probably of recent origin). The caves yielded large quantities of red-and-black (B1) and red-and-black painted (B2) ware sherds, and a variety of other types, including some of a hard fired coarse grey and buff (D) ware of Medieval date. No traces

were found of Neolithic type ware, or of stone artefacts. The pottery is illustrated below (Pl. 63).

Site No. 93. Shivapur North.

Keis mentioned a site on the banks of the Tungabhadra, about 5 miles SW of Anegundi. He did not, however, visit the site, and no later mention of it is made. The sites discovered during the present survey, at Shivapur, which are the most extensive burial sites after the famous Site No. 6., and have also distinct traces of an associated settlement, lie about 8 miles west of Anegundi, within a few hundred yards of the banks of the river, and may be taken to be those of which Keis heard.

The north site lies about 400 yards north-west of the new dam, which replaces an earlier (Medieval) stone dam, and threatens to inundate the site when it is completed. The graves extend for some 800 x 300 yards to the north side of the Shivapur hill. There are in all nearly 200. The great majority appear to be cists inside circles, whilst a definite minority are simple circles of stones. Several sub-groups are noticeable. Thus in one group, nearly all the graves with visible port-holes have it on an east alignment with small entrance-ways (see Pl. 28, 1). In another group a north-east alignment and entrance-way, whilst in a third group the alignment of port-holes was predominantly south (although there were exceptions in each one of these areas). To the eastern part of the cemetery,

at the foot of the hill which will form one side of the new tank, there was another group of five or six simple cairns, of up to 28' diameter.

The cists are of well squared stone slabs, with a normal thickness of 4"-7". The site, unlike Nos. 6 and 73, is entirely on a flat sandy plain, and all the graves are to some extent dug into the ground. The normal dimension of cists is between 6' and 8' square. A few exceed this whilst a number are smaller - 2'6" x 2' being the smallest dimension noted. The plan is in most cases of swastika form (Pl.29a). Nearly all the graves have been tampered with (by masons, both modern and ancient, cutting stones for the dam). I could find only three capstones in situ and complete, whilst about 15 others are in situ but in broken condition. Also in many cases the side slabs have been broken off at ground level, and it was therefore not easy to estimate the original height of the cists. From the few complete examples, however, I estimate that 2'-3' was a maximum. In one case the grave is apparently in perfect condition. (Pl.29a). Here the capstone protrudes abouts one foot above ground level, and the area surrounding it is piled with dolerite[&] granite chips to the thickness of the capstone. The capstone is (in existing examples) by far the heaviest stone in the grave, in this respect varying from capstones of site No. 6, and is up to 1'6" in depth. The surrounding stone cairns are almost entirely of black dolerite chips and pebbles up to 9", and seem to be taken from

the dyke that runs along the north of the site. A surrounding stone circle seems to have been the rule, although many graves have now been stripped.

To the south of the area is a nullah, but the banks bore no trace of occupation, and the section showed a sandy wash over the bed rock. To the south-west are rocky outcrops with several rock shelters. Here were found a number of crude microlithic flakes of quartz (similar in type to those from site No. 87). The Shivapur hill (1992') appears to have made ground and terracing running along its northern foot, but I was not able to examine it.

Site No. 94.

The Shivapur South site lies about $\frac{1}{2}$ mile south of the dam, and S.E. of the 1992' hill. It lies to the south of the road near the 17 miles 4 furlong stone on the canal service-road from Munirabad. To the west is a walled fort of Medieval date, now abandoned.

Grave Site.

It appears that many of the graves were partly destroyed by the Medieval builders, and more recently the area has suffered from bull-dozer and road-making activity. About 60 graves in all were counted. They conform exactly to those of the north site. A fine capstone 8' x 9'

was noted. In every case in which port holes were visible they had an eastern alignment. Among the graves, modern digging had revealed a shallow pit in section. This appeared to be about 4' deep, and yielded quantities of fragmentary red-ware sherds, and one good rim of red-and-black (B1) ware. Although this pit did not appear to be connected with any of the cist circle graves, its proximity suggests chronological association.

Cave Settlement.

From 400 to 600 yards south and south-east of the graves lie a series of little rocky hillocks, with a general WSW/ENE line. Beyond them lies the river Tungabhadra. Interspersing the lines of rocks are a series of little grassy plateaux, often almost entirely surrounded by rocks. On these plateaux are numerous traces of stone walling for terraces, and of house platforms. The rocks contain a large number of fine natural caves, sometimes with foundations of stone walls built out to improve them. These caves are the largest and archaeologically the most promising in the district, and there can be little doubt that they contain undisturbed original deposits. The south end of one cave, of about 60' x 10' and open at both ends, opened onto a little artificial platform sheltered by overhanging rocks and here close to the western rock-face were found two kilns of mud and stone. Their position

closely resembles that of some of the Piklihāl slag heaps. The kilns were each about 3' 0" in height and 3' 6" diameter at the base. Both were open on the outer side and presumably there had been doors in the lower part. The shape was conical, with the upper portion missing. The mud plastered walls were about 3" thick at the top and increased to about 9" at the base. The mud plaster contained sherds of red-and-black (B1) ware, and similar sherds were found in the bottom of the kiln, together with a piece of iron slag. On the platform, and about 6' from the kilns I found a Neolithic axe lying in the surface. A little to the south of the kiln cave is a remarkable complex of caves extending for several hundred feet to the west, south and east. In these caves, and in the outer passages were found many red-and-black (B1), painted (B2) ware sherds and sherds of the grey and buff coarse (D) wares. Fragments of rubbing stones and broken saddle querns were also found, and one stone bead. No wall paintings or engravings were noticed. At a number of places there are good deposits in situ in the cave floors. At one of the entrances of this group there was ^{an} artificial platform, about 15' wide and on it were found rubbing stones and further sherds, including a typical A ware rim. In a small side chamber were traces of a stone hearth. In and around the caves a small number of crude quartz microlithic blades and chips were found. (Pl. 83).

General: site of the Benkal Forest Area.

A certain pattern runs through the sites described above. As there are some features that occur nowhere else we shall attempt here a brief analysis of the sites.

1. The 'prehistoric' sites, in spite of the finds of stray 'neolithic' and 'microlithic' artefacts, seem generally to belong to the post-neolithic and pre-medieval A periods. The majority are grave sites, sometimes with known habitation areas, caves etc., and lie on the fringes of the forest region rather than in its heart. The grave sites fall into two groups: those on the hill-plateau and those at the foot. Sites 6 and 73 represent the former.

2. The grave sites. A distinguishing feature of the graves is the nature of the ground on or in which they are made. An analysis of the graves of the whole district is given as Appendix 1. of this chapter. Those built on the rock surface are:-

1. The stone cist, with or without porthole on alignment north, south-east, south-west, east etc, with or without entrance-way, generally with floor slab, generally swastika plan, generally with capstone. (A)
2. A degenerate form of A in which a capstone slab is detached from the bed rock and raised on two, three or four pillars, generally not more than 2'6" in height.

The pillars formed with slabs of gneiss. The intervals may be filled with single slabs, or built up in brick form. 'Window' spaces may be left on one (generally south) side or on four sides. (A2.)

The types built in the soil are:-

3. The cist, with or without porthole, on east, north-east or south alignment, with or without entrance-way, often of swastika plan. Generally with a cairn of granite or dolerite chips, and with - but sometimes without - a surrounding circle of largish boulders of gneiss. (A1).
4. A circle, sometimes two or three concentric circles, of large boulders. The diameter varying about an average 20' with the largest of 40'. (B).

The circle may have a cairn of chips and smaller stones in the centre, and in one case, had an inner oval of small stones in the centre. There is no sign of a cist visible from the surface. (It is, perhaps, legitimate to infer, and later support will be adduced for the inference, that these circles conform roughly to either the circle with² buried cist of the type excavated by Hunt at Raigir or the pit circle of Wheeler's Brahmagiri excavations).

5. A cairn of small stones, of up to 30' diameter, sometimes of an oval form. (C).
6. A variety of circle, similar to D but with an outer squarish platform of small stones. (B1).

7. An elongated cist, averaging 6' x 2', sometimes single, and more rarely double, treble or even quadrupal. Rarely with capstone, rarely with surrounding stone circle or cist. (Munn called this variety compartmented).(A3).

3. The Surface Finds. Pottery from the graves and associated habitation areas consists of black-and-red (B1) ware, the painted (B2) ware. There are a number of other finds that support the dating these imply.

4. The Method of Working the Stone Slabs of the Graves
There can be no doubt that the slabs were detached from their natural beds by means of the fire-setting and wedge method (described below in Chap. VIII p.448).

The sites coincide often with the quarry itself, and with places at which the rock had a "phenomenally true cleavage".³ There can, however, be no doubt that after cleavage, the slabs have been trimmed with a hammer of some sort to obtain the accurate size and shape required. The porthole is also mainly hammered into shape, although a cold chisel has probably been used to facilitate the process. No trace of drilling to detach slabs was observed at any site, except in probably medieval or modern context. At Site No. 6. Keis⁴ noticed "in one instance I discovered a line of little holes made in the rock by a small chisel just in the same way as the Waddiwas do at the present day,

only that the instrument was much smaller than those now used by them. This was the only trace of instruments I could discover". These drill holes have not been noticed by any later observer, however. Munn, who surveyed the entire cemetery at Site No. 6 writes⁵. "It is obvious that these, from their hammer-dressed edges, are of a later date (than the rough-stone dolmens).... If the discovery of Keis can be substantiated, it antedates the age of this method of splitting stone much further into the past than I had ever imagined". In the course of his survey, however, Munn found no trace of the method, and other writers' observations outside the district do not support the use of the drill at this time. Thus Newbold⁶ noted at the cist cemetery at Panduvaram Deval, N. Arcot Dt.; "It is curious that no chisel marks are found on the vast blocks which they managed to separate (one slab was more than 12' square), by fire and wedge probably, from the neighbouring granitic rocks, and that the circular apertures through the centre of the side slabs appear to have been knocked through by a hammer or hard stone, and yet done with considerably nicety".

These observations seem to justify the conclusions drawn above, and further considered in Chapter VIII p.448f .

II. The Gadwal Area.

The area of this group of sites is roughly a strip of

ten miles width running NW/SE along the south bank of the Krishna river and centering upon the outlying Dharwar rocks which have provided it with a black cotton soil covering. In recent times it has largely consisted of the Gadwal Samasthan, and has formed one of the least developed portions of the district. The new road from Raichur to Alampur is the first "pakkah" road in the area, and there is no motorable crossing of either the Krishna or Tungabhadra east of Raichur itself. This does not mean that the area was necessarily isolated in antiquity, for there are many passenger ferries that operate on the rivers, - but none the less, the woody strip east of Raichur and the Telegu language frontier contains very few sites and divides the archaeological features of the east and west of the district. The area has been as yet very little explored, and further research may provide the evidence that is at present wanting. On the other hand, it is certain that the Geological survey, inspired by Munn, recorded any sites that were found in the course of its fairly extensive exploration of the region, and there seems to be no reason to discredit the large blank area on the Map appended to JHGSIII Pt. I. The present survey could not attempt, within the definite time limit, to seek new sites in this difficult area, and it was therefore determined to concentrate on the sites around Gadwal, as being the most likely to produce evidence of a settlement. The outcome was partly satisfactory: a number of the grave sites reported in JHGS were visited, a number

of new sites discovered, and finally, a quite new and, in some ways, unique complex of monuments was found in the vicinity of Gadwal town, which seems to relate to the only major settlement site in the area. Also at two places, in connection with the above sites stray neolithic artefacts were found, the first indications of neolithic settlement in the area.

It should finally be noted that the rainfall tends to increase steadily eastwards from Raichur and thus Gadwal lies in the 25"-30" p.a. zone. This perhaps in part, accounts for the comparatively thicker woodland and date palm cultivation

Site No. 80. Jamshed.

JHGS III Pt. 1., reported a grave-site of about 20 circles south of the track from Gadwal to Latipur. Whilst visiting this site, I noticed two other sites within a short distance, and an extensive search of the area revealed no less than 6 stone alignments, four groups of graves with unique features, and a settlement area crowned with a medieval fort. These will be described individually. The sites are all marked on the key plan (Pl. 30).

GI. This site lies on the north of the track Gadwal-Latipur, about one mile east of Gadwal Railway Station. There are in all four graves on a little rocky prominence

surrounded on three sides by a nallah which has been terraced and now yields a rice crop. A short way north is a small modern dam. The ground around the graves is strewn with chips of quartz, and several appeared to have been worked, although no perfect microlithic specimens were found. No pottery was found.

The largest grave is a stone circle with cairn, 44' in diameter. The cairn is about 4' high, and standing as it does on the crest of the rock, makes an imposing sight.

G2. This site lies to the north of the track, about 2 miles from Gadwal Railway Station. It is on the crest of a gentle slope up from the nallah which divides it from G1. There are 6 circle graves with diameters between 20' and 25', all single circles with slight cairns. They lie in two lines to the north and east of the stone foundations of a very different type of monument; ^{appear} and/to post-date it. This is confirmed by the next site G3, and strengthened by the open nature of the fields in which it occurs. The "building" is shown in plan and section in Pl. 32. It lies 20° east of a true north/south orientation. It consists of a square compound (64' square) with low walls of rubble masonry. The walls are 2'8" thick and now stand to the height of about 2'. (The orientation is interesting as it corresponds closely with that of the neighbouring stone alignments).

In the centre of the south wall, there is an extension some 45' square. This has battered stone sides, and rises 6' to form a flat platform (18' square). There is no trace of any entrance to the larger 'compound', but outside the north-east angle there are traces of another extension, about 40' long and 30' wide. This lies within a few feet of one of the circle graves. A minute search revealed no pottery or other surface finds near the monument. The villagers call the spot "broken walls". (PL31a)

G. G3. About 440 yards south-east of G2 lies a third group of circle graves. This is about 50 yards south of the track, and seems to be the site referred to in JHGS III (Gadwal-Latipur track). There are 23 circle graves in the main group. They are all single circles of boulders averaging 1'6" - 2'6" diameter. Two of the graves have small extensions, about 15' wide on the eastern side. (See Plan). To the west of the main group of graves, and about 30' from the nearest there are foundations of another 'building'. Here again there can be little doubt that the graves and building must be closely associated in time, for the former lie around the latter on three sides. The building has an approximately similar east-west axis to G2; the walls stand to a height of 3' and are 2' thick, and made of blocks of granite of irregular shape, but laid with

care so that the outer and inner faces are quite regular. The centre is filled in with smaller blocks. The outer wall encloses an area 75' long and 24'8" in width, and there is a trace of an entrance of about 3' in width on the north wall. At the west end of the enclosed area is a platform 2' in height, and running the entire width of the building. The level part of this is 8' 6" wide. There is considerable stone debris around the wall as it now stands, and it seems likely that it was originally of greater height. (See Pl.33).

About 200 yards south of the structure there lie 2 more circle graves, one composed of small stones of dolerite with an outer diameter of 28', and two small "compartments" on the north and south axis.

About 600 yards SE of the building are a number of small cairns, often of irregular or oval shape, but lying near an open well with stone lining, which has now largely fallen away.

Before considering the stone alignments which were found in the area we shall first describe two large platforms which occur in close conjunction with them. These platforms should, perhaps, be considered as graves, but they appear to form a class distinct from the smaller circle graves and as they occur at several sites, they

are treated separately.

AI. This site lies on the track between the nallah and GII. It is about 1 mile 7 furlongs from Gadwal railway station. On either side of the track, and about 100 yards apart are two platforms. The northern of these takes the form of a near square, 91' on either side, with a raised central area, 62' square. The sloping sides of the platform appear to consist entirely of small pebbles up to 8" long, whilst the central flat portion is of sandy soil. The southern is a near circle with outer diameter of 90 feet and inner circular platform of 63'. The centre is used for cultivation. In either case the height is about 3' from the surrounding ground level.

To the east of the northern platform, and about 25' away, is a stone alignment composed of roughly squared stones. The tallest (now fallen) is 6'3" in height. There were 16 stones although some have been displaced, and the original lay-out seems to have been 4 x 4. The orientation of the standing stones is very nearly 20° E. of N, and the intervals seem to have been 36' E/W, and 28' N/S. The blocks are roughly rectangular and about 3' square. This spot is locally known as Nilu Rallu (standing stones).

AII, lies about 250 yards SW of AI. It is a 25 stone alignment (5 x 5) with an overall size of 120' x 102'. The orientation is about 15° east of north. The stones are similar to those of AI but slightly taller and several of the standing ones have a height ranging from 5'-6'.

AIII. The third alignment lies about 300 yards east of AII. It is built, as are the two former on the sandy soil at the foot of the slope down to the nallah. The stones are for the most part shorter than the first examples, and have suffered more from overthrowing. It is not possible to say how many there were initially, (although the number must have been about 20) nor how they were placed, although there are at least four in E/W orientation which seem to indicate that it was similar to that of the other sites. A few feet north of the alignment there is a well which appears to be of later date than the monument.

AIV. This alignment lies almost exactly 1000 yards WSW of AII, and less than 100 yards NW of the settlement area (see below, Potla pahād). It consists of the remains of an original 4 x 5 grouping, although some stones are now missing and at least two were re-used in the building of the medieval fort. The spacing of the stones is 21' on the N/S axis and 22' on the E/W. The

size of stone resembles that of the other examples. The orientation is 15° east of north.

AV. This is the largest group of aligned stones in the complex. It includes one section of 7 x 5 stones, about 6 stones scattered 100 yards SW, and another group of 17 remaining stones, still further to the SW. The whole lies about half a mile NW of the village of Jamshed, and about a quarter of a mile due west of AIV, on the western slopes of the nallah which divides them. The overall dimensions of the space thus included are about 150 yards by 200 yards. The spacing of stones in the best preserved section is 27' x 36'. The orientation in those cases where a reading was possible was 20° east of north.

AVI. Is a small alignment of nine stones (3 x 3) sunk deep into the sandy soil and very near the dry bed of the nallah. The site is midway between AV and the settlement area. The alignment is 15° east of north.

Potla pahād, settlement area. About 700 yards north of the village of Jamshed, and about a mile WSW of the GII and GIII sites there is an area about 400 yards by 200 yards strewn with potsherds and debris. It lies in an island of ground raised about 15' above the bed of the nallah, and on its southern bank. At the centre are the

remains of a medieval fort, the walls of which are built up of mixed, irregular rubble, and give way to small round bastions. The construction is poor throughout. South-east of the fort, and near the track to the village there is a monument consisting of a rectangular platform of 27' x 34' with a central raised section with small roofless shrine containing Hanumān and Vishnu mūrtis. (Pl 31b)

The fort consists of a western section of about 200' x 240' and an eastern extension of about the same size, but with only two bastions. The significance of this plan is not clear. The make up in the centre of the walls was found to include a number of sherds of red and black (B1) ware, and one crude 'neolithic' axe of dolerite. The outer (eastern) part of the plan included two stone circles of only 9' diameter, (Pl 31b) whilst a small earth pit nearby indicated an occupation depth of 2' only, at that point. To the south of the fort is a well, whilst beyond it on the north side is a modern cemetery. The villagers call the area 'potla pahād' or 'buffalo place'.

The area produced remarkably poor and few surface finds. The majority of sherds were of the coarse grey or buff medieval 'D' ware, whilst very small numbers of red and black, brown and red, B ware sherds were found (see Pls 4-7). Apart from the stone artefact referred to above about half a dozen crude microlithic flakes of quartz and agate were found, and a core of quartz. A number of

granite and dolerite rubbing and grinding stones was also noticed.

The remaining sites visited in the Gadwal area present an almost monotonous aspect, as circle graves without any clear evidence of habitation, or even of other types of grave. Perhaps the answer to this poverty lies in their position outside the region of natural wealth that may be discerned in the western part of the district or perhaps it is merely the outcome of insufficient exploration. However it may be, it is certain that the potential habitation areas that were investigated in association with some of the sites to be reported, did not produce the clear evidence that is forthcoming in other parts of Raichur.

Site 10. Chinna Chintadura. The site is about half a mile west of the village. It consists of three circle graves on cultivated land. The graves have been all but obliterated. This little site seems to be distinct from that reported by Munn in JHGS III, Pt. 1. (See above list 1). From the higher ground to the NW, I was able to observe the hills lying to the west of the Vāmanpalli site described by Munn (JHGS III Pt. 1). These hills appear to show signs of made ground and terracing but I was not able to inspect them more closely.

Site 11. Darūr - east of. An interesting group of 41 graves lies just south of the Gadwal-Raichur Road about 2 miles east of Darūr. The site was first noticed by Munn. About half a mile to the north lies a granite hill on the sides of which there is still evidence of made ground and terracing, although this has been much damaged by recent quarrying. No traces of pottery were found in the hill area, but one neolithic type polished axe was found on the surface close to the foot of the hill, as were numbers of quartz flakes suggestive of the manufacture of microliths, although no artefacts were found.

The graves include several varieties of circle. The largest being a single circle of 45' diameter piled with small stones to form a cairn of 6' height in the centre. The stones of the circle were not simple boulders, as is usual, but took the form of roughly squared orthostats of up to 3' in height. (Pl 346) There was one other grave of a comparable size which shared this peculiarity. All except three of the circles were of granite, the majority in simple boulders. The three other graves were surrounded by boulders of blackish dolerite. One lay immediately to the NE of the largest grave, whilst another was of nearly rectangular plan and measured 35' on its

long (NE) axis. A curious group consisted of two circles joined - a larger northern circle with a small circle of pebbles in the centre of it and a small attachment of oval plan and about 6' in length grafted onto the SW end. Around the largest grave was a group of four smaller ones, of about 15' diameter, whilst three or four outliers were of oval plan, their length varied between 12' and 16'. In a number of cases there are traces of inner circles of boulders buried in the cairns, which in these graves were usually about 3' high. In one or two there was even a suggestion of a rough stone cist in the centre, although none was clearly exposed, and no capstone was visible. One unique cist form occurred among the graves, in the conjunction of four rough slabs enclosing a space of about 3' x 4'. Several graves appear to have been opened in the remote past.

Site No. 74. Darūr. About $1\frac{1}{2}$ miles west of. On a little eminence north of the road to Raichur there are the vestigial remains of four circle graves on cultivated land. Cairns alone remain. About 45' east of the graves is a large, near circular platform of 90' diameter, with no trace of large stone circle.

Site No. 75. Gadwal-Darūr Road. Near 1 mile 7 furlongs stone. To the south of the road are 8 circle graves, seven between 22' and 28' in diameter and one of 15' and an imperfect circle. The circles are made for the most part of granite orthostats, roughly squared, of 2' x 2'6" and a height of 3' or 3'6" above ground. All have cairns of smaller stones and pebbles. No cists are visible.

On the north of the road the cemetery continues about 400 yards NE of the first group. There are about 70 graves, mostly in good condition. Sometimes groups of three or four graves suggest a NW alignment, but the regularity never extends beyond this number. All are circles, the majority of round boulders, but a smaller number of roughly squared stones, and two or three suggested that the stones had been struck to form a rough point (see Pl. 34a). The average size was 20' - 26' diameter. No grave exceeded 35', but several were as little as 15'. The centres were filled to form cairns of small stone and pebbles, mostly of dolerite and of blackish hornblende schist. In no case was a circle of these stones noted. In no case was a cist or inner circle detected. No surface finds were made.

This group of graves lies on a promontory of gently sloping ground, surrounded on three sides by irrigated land.

Site No. 77. Gonpahād-Pedda pahād track. East of a small granite hill. The Pacherla site of JHGS III Pt. 1. is to the north of the same hill. There are two cairn circle graves, and a further two that appear to have been opened at some time. The diameters are between 18' and 22'. Along the eastern foot of the hill there are definite traces of terracing and of made ground. There is also a small natural tank in the rock. No surface finds were made.

Site No. 82. Kakulwāram. To the east of a small rocky hill about half a mile south of the village there are two circle graves. The smaller is of 18' diameter of mainly round boulders, whilst the larger of angular, broken stones is of 30' diameter. The rocks form roughly rectangular orthostats of about 3' in height. There are signs of a southern entrance within the circle, and although there is no cist visible two more large stones are to be seen in the centre. No trace of habitation area, and no surface finds. (Pl 296)

Site No. 85. Madnakal. The site lies to the east of the track from Ij to Gadwal, and of the hill 1334'. The hill has distinct traces of terracing and made ground at the foot, on the slopes and top; and

between the grave and the hill, and running southwards, there is an area in which many fragments of pottery are to be found. All the sherds were much weathered and it was impossible to identify any, there can, however, be little doubt that the hill was occupied in post-neolithic times. The grave is a double circle of rounded boulders, about 1'6" wide with a diameter of 25'. There is no trace of a cist, but there are signs of a SW entrance-way. About $\frac{1}{4}$ mile north, near the angle of the hill, are two more graves, both single circles of rounded stones with diameters of 18' and 20'. This site merits further exploration.

Site No. 55. Pedda pahād. The graves are on the SW slope, north of the tank and NW of the village. There are 21 cairn circles in all, one of which is used as a modern shrine. They are all of average size with the exception of four, of which one is 12' in diameter, and the remaining three are irregular - one a circle of 8' diameter and the others rough ovals of about the same length. The stones of the circles at this site are generally rectangular, with greater breadth than thickness - giving the effect of circles of slabs. There are few boulders. One of the graves has been crudely excavated, perhaps

as the result of the interest shown by Munn's surveyors who first reported the site. It appears that the grave was a pit circle with entrance-way to the south and cairn of small stones. There was a quantity of sherds of fine red-and-black (B1) ware in the pit. (Pl. 82). The entrance-way slabs were 1'10" apart. Another grave had a small extension on the SW outside the regular circle.

The sites of the Gadwal area are now complete, but there are two further grave sites which may be classed with them, and belong to somewhat similar areas. Both these are of irregular type, and indeed without excavation it is even doubtful whether they are graves. There does, however, seem to be a certain conformity to individual graves from the Gadwal sites that suggests that these are in fact degenerations of the circle grave, and they are therefore listed, as perhaps indicating a late stage in the so-called 'megalithic' complex in this area.

Site No. 81. Jilingeri. About one mile north of the village, on both sides of the road from Yerragara to Alampur, on a rocky eminence, is a group of (?) graves. They have been recently robbed by stone waddars engaged in road building, and are even more irregular than when complete. Nonetheless, they are little more than groups of irregularly placed stones,

sometimes forming rough ovals, and with vestiges of cairns in the centres.

Site No, 56. Rajulabanda. About $1\frac{1}{2}$ miles ENE of the village and $\frac{5}{4}$ mile NNE of Timmapur. The site was first noticed by Munn. It is one of a group of 10 circle grave sites reported in JHGS III Pt. 1, and the only one of them that was visited during the present survey. The sites all lie within two or three miles of the banks of the Tungabhadra, and in an area that is crossed by frequent trap dykes.

There are about a score of graves on either side of the track from Rajulbanda to Kamalahatti, mostly lying to the north of a small surface drainage tank. The country is open grassland, sloping gently to the south and east. There is a trap dyke exposed near the site. The graves are widely scattered and of most irregular form. The more regular are small circles of large rough boulders of a diameter of 8' - 9'. (As at Manvi). Others have in addition, an inner oval of stones of about 6' x 4', or rough coffin form, the stones being up to 2' 6" long. The outer oval is of smaller stones of less than 1' size. There are several earth covered mounds of about the same size as the graves, that I take to be in original condition. No surface finds were made. (See Pl. 2] for plans of 5 graves).

General: The Gadwal sites.

The pattern of sites in this area is quite distinct from that of Benkal. The majority are grave sites whilst the evidence of settlements, slender as it is, seems to indicate the terracing of suitable gneissic hills, and their occupation. The material evidence for this occupation is still almost entirely lacking. The only other group of monuments found are the stone alignments east of Gadwal. These and the other remains from that locality seem to indicate that this was anciently, as in more recent times, the main centre in the north-eastern part of the district. The significance of the stone alignment will be considered below (Ch. VIII Appx. A). The two structural foundations found in association with circle graves raise new issues that will be considered in the context of dating the cultures for the whole district (P.536f).

The grave sites are situated in two types of locality; either at the foot of hills which show traces of ancient occupation, or in rolling country on the highest point available. The latter are rarely related to any traceable settlement, and frequently near modern surface drainage or irrigation works. A number of the sites lie (following Munn's explorations) on the banks of, or near, one of the great rivers.

The graves may now be classified but it must be noted by way of caution that no excavation has yet been carried

out in the area, and the value of surface observations is limited, and reveals little of the subterranean part of the graves.

1. The circle of stones, usually rounded boulders, but often roughly squared and standing to three feet in height, sometimes roughly pointed, with cairn of small stones; sometimes, but rarely, a double circle; sometimes with south or south-western entrance-way stones, and at least in some cases with a pit but no cist; diameter varies from 12' - 45', but most commonly is in the region of 18' - 24'. (B)

2. Large squarish or near-circular platforms, with no trace of stone circles, but sides sloping and built up of small stones and pebbles. Diameter about 90' and central flat platform diameter about 62'. (?) A type of grave. (D).

3. Small circles of crude stones of up to 8' diameter, and ovals and irregular forms of up to 15' length, with often crude ovaloid coffin forms of larger stones in the centre, these being of roughly human size. Sometimes with earth or pebble cairn. (B2).

III. The Maski-Lingsugūr-Mudgal Area.

The third group of sites is chosen to include two distinct features: three of the richest neolithic settlements in the district, a number of smaller but productive settlements and the occurrence of a large number of ancient mineral workings of indeterminate age. It may be stated that a number of the neolithic sites described by Foote were not revisited, as the evidence available is quite unequivocal and Foote's publication of selected finds proved here, no less than in Bellary (for Subba Rao), the value of such a method of exploration. It is also perhaps significant that this area lies just north of the minimum rainfall zone, which includes the Benkal forest and the Sindhūr and Mānvi tālukas.

Munn⁷ shows the sites of no less than 23 ancient gold workings, all lying on the Dharwar rocks, 5 iron workings to the south and south-west of Mudgal, and one iron and copper working near Machnūr. (Pl. 10).

Site No. 47. Maski. As has been seen, Maski has long been recognised as one of the major sites of the district. It has been the object of considerable attention, and search. In spite of this, and of several publications there has, as yet, been no clear account of the site as a whole, and no attempt at a classification of the ob-

jects found. The reports of the excavations carried out by the Archaeological Department of Hyderabad are not altogether satisfactory from this viewpoint, and it is to be regretted that the only plans so far published fail to bring out the salient features. Furthermore, the vagueness that surrounds the site has lead to its true importance being obscured. The criticism of Gordon⁸; is just in so far as he notes the irreparable damage done by the excavation particularly of the Edict cave, but his suggestions for the right approach to the site may be seen to differ widely from the conclusions that follow.

In view of these facts and the necessary limitations of the exploratory methods and time at the disposal of the present writer, it seemed best to aim mainly at a general survey and to attempt to assess what are the archaeological potentialities of the several parts of the site, so as to suggest lines for future research. For this reason the various periods of settlement^{are}/indicated.

General: Maski hill is a mass of gneissic rock ranging from 300' to a maximum of 500' above the surrounding plain. The general disposition is NW/SE, and the highest summit is Durgada Gudda (1911') which is divided by a saddle from the Malikārjana shrine. To the SE there are four smaller rocky outcrops extending over a distance of about 3 miles. To the north lies the Maski nallah,

flowing generally ESE. The bed of the nallah has a water supply throughout the year although the stream ceases at the onset of the hot weather, and this flat, sandy plain makes a remarkably cool escape from the sultry alleys of the village during the nights of April and May, and the village families may be seen there at such times.

Medieval Settlement: It appears that there has been a continuous occupation of the area since prehistoric times. The modern village lies on the river bank, east of the Lingsugur road, and east of most of the ancient habitation areas. The banks were searched for traces of ancient pottery, but all that was found was of the coarse black-grey (D) ware which still predominates, and dates from medieval times. There does seem, however, to be ample indication of a fairly extended occupation of this site. (Pl 40)

Pre-Medieval Settlement A & B. The earlier settlement probably lay to the west, north of the hill and on both sides of the nallah. This^{is}/represented by the excavations carried out in the Kuttri field near the Sūli dibba and Gauri fields. The area produced considerable structural remains, including ashlar masonry and burnt brick buildings. There were also (?) Sātavāhana and probably later coins, typical Sātavāhana period pottery, fragments of terracottas and numbers of microliths.

It is indeed to be regretted that section drawings of this excavation, and a full publication of the coins recovered are not forthcoming, as surface observation can add nothing further, except to stress that this, and not Sultan Mohammed's field appears to have been the main settlement area in pre-medieval and specifically Sātavāhana times. The excavations in the Sultan Mohammed's field produced little of this period except burials, and it seems probable that from pre-medieval times, the field was used for the depositing of cinerary urns (the sequence of burial customs shown here is dealt with below p.171). It is possible that the earth-and-stone-built bund which lies SW of the nallah and intersects the area in question dates from the medieval period only, but without further evidence its exact age cannot be discussed.

Post-Neolithic. Under this heading may be included the stone alignments that lie to the west of the hill, and the stone circle graves to the south of them. The extent to which these may be differentiated in period from the pre-medieval remains depends upon the chronological evidence of the Brahmagiri excavations, supported as it is in the main by those of Piklihāl. The settlement area of this period seems to have been mainly at the foot of the hill, on the west side, and particularly on the level stone-built made-ground that survives SE and E. of the alignments, whilst habitation seems to have

persisted on the earlier sites.

The alignments may be treated as three. The first (AI on the plan) consists of nine stones (3 x 3) with an orientation 20° east of north. The central group, (AII) is much damaged, the original number of stones is unclear but the Department excavated some graves in the vicinity although the report is as yet unpublished. The third (AIII) and largest group appears to have been partly overbuilt by the (?medieval) stone terracing and building foundations. The original number of stones is again not clear, but the plan seems to have been rather irregular. (Pl. 4a)

The habitation commences at the foot of the hill with a series of stone foundations. Some of these foundations are almost certainly medieval and are in all probability contemporary with those lying to the east on the slopes, and of the fortification on the summit of the southern height of the hill. Throughout this area grey medieval (D ware) pottery was found. (Compare Mānvi and Pikhāl). On the lower slopes, however, numbers of sherds of much comminuted red-and-black (B1) ware, and some sherds with B2 painting were found. The building foundations follow the lines of very clear terraces, and extend for about 150 yards at the foot of the hill. The terraces extend up the angle of the hill, and on the top there is a considerable area of plain ground. The SE

extent has many foundations of stone, but the pottery is almost entirely coarse grey (D) ware. To the north there are several fields, lying west of the Malikārjuna temple, and traces of three distinct bunds now silted up. All this appears to be of fairly recent date. It seems, however, fairly certain that this area includes an earlier settlement particularly around the foot of the hill.

The various rocky outcrops were minutely terraced in the area, and numbers of caves and shelters of rock remain. There are many rock-bruised animal and human figures on the highest points. The humped bull occurs many times (see Pl. 1094), whilst the elephant and (?) buffalo also occur, as do the tiger and deer. Alongside these however, there are two Hanumāns and a pada-chinha which must be medieval. Human figures are mainly 'pin-men', but lines of dancing figures occur. There are several blocks of stone which resound when struck, and which have hollows worn in them by striking: the practise being continued by the modern herd boys.

In the fields SW of this site there are three very indefinite stone circles, which appear to have been built around natural outcrops of rock.

Neolithic. The evidence for neolithic occupation suggests that there were numbers of small terraces and

natural caverns along the western slopes of the hill, both around the Asokan edict and also in the plateau above it, and along the slopes of the hill southwards to the site mentioned above. There must have been similar habitations scattered around the NW slopes of Sultan Mohammed's field. The writer found a sherd of buff ware with purple painted lines in this latter area, whilst Gordon describes the pottery from the edict cave area as grey and a 'primitive blotchy pale brown'. An examination of Gordon's sherds reveals that they contain an interesting variety of A ware types, including the large open bowl, a small bowl, characteristic rims, a knobbed lid and a 'horned' stand, similar in ware to the stands from Piklihāl. (See below PL.31, m.76) This evidence fortifies the brief excavation report (above p.84) and seems to provide a definite proof that the neolithic occupation continued even after the inscription was made.

In proof of this Codrington reports finding quantities of sherds identical with those of Brahmagiri IB in the crevices and corners of the edict cave during a visit to the site in 1952. It must, however, be noted that the neolithic and post-neolithic remains, as they appear on the surface, are not so extensive as at Piklihāl, and the conclusion seems legitimate here, as at Kpbal (q.v.), that the site only sprang into importance in late neolithic

or post-neolithic times.

Note. The Chronology of Burials in Sultan Mohammed's field.

It is reasonable to suppose that the slopes around at least a part of the field were terraced and used for habitation from neolithic times. A careful survey of the central portion reveals that this too has been terraced at some time. It also appears that at a date subsequent to the terracing the whole system has been allowed to decay, and that wash down from the slopes followed. The burials are not clearly established in this scheme, but a suggested dating, which was supported by such field observation as could be made will be given. The modern ground surface is cut by a number of erosion nallahs, and following one of these to the SW slope a section was found through a series of stone terrace walls, and at the head of the nallah near the foot of the slope, through a small dam of great rocks, possibly built with the object of checking erosion. The wash which marks the collapse of the terrace system on this line, also seems to indicate an acceleration of erosion from above. A possible explanation of a similar phenomenon is noted at Piklihāl (p.269). The urn burials appeared to be in this wash, and therefore post-dating the terrace system.

It is not possible at present to precise the re-

relationship of the various burials. The main number seems to have been urn burials of post-cremation bones. Photographs taken at the time of excavation suggest that the urns were often lidded, and in some cases had pottery placed around them. They are generally reddish brown, with sometimes the distinct crackle (B3 ware). The depth of all was within a few inches of the surface. The urns seem to have been buried, and perhaps a diminutive cairn of stones placed as a final covering. Photographs of the excavation show that the terra cotta sarcophagi were found closely associated with, but under, urns. They had red and red-and-black (B1) pottery placed around them. In one case it is undeniable that an urn was buried after a coffin, but it cannot be said at what interval. The general impression of pottery and relative position is that it was a short one. It is not clear what is the relationship of the urns and the extended burial of the remarkably prognathos skeletons. One burial was surrounded by a line of stones suggesting a coffin form. There were apparently no grave goods. It may either be argued that this is an earlier burial or that it is of a neolithic type, which survived at least into post-neolithic times. The co-existence of A and B wares in excavations indicates that there is no necessary contradiction in making this burial contemporary with the urns. Pl. 41a shows photographs of terra cotta coffins from the excavations.

At one place to the extreme west of the area, and on a higher terrace, an urn, covered with a small slab of stone, was noted in the lowest layers of in-filling behind the terrace wall. It is not necessary to say that this terrace must have been later than the ones referred to above, as the urn appears to be at least contemporary with its construction.

We may now summarise the evidence here in the light of field observations.

Three main burial types are noticed:-

1. Extended, or in one case contracted, burial, without grave goods (?) but with rough coffin-shapes of large chips of granite.
2. Burials in terra cotta cylindrical or bath-shaped cists of collected bones, with red-and-black ware pottery around the outside of the cist.
3. Burials of ashes in globular lidded urns, generally without accompanying grave goods.

Type 1. is related to the Neolithic A and B burials of Piklīhāl: Type 2. to the southern burial complex (Megalithic) pottery cist-burials: Type 3. to the pre-medieval and Aryan, orthodox ash disposal urn-burials.

The relative dating of these 3 types is, however, not

at all certain in this instance. Generally speaking the burials of 1 and 3 type appear to be in one level throughout whilst those of 2 appear to be slightly lower.

Unfortunately this has no real meaning unless it can be shown from which levels the various graves were dug, as it is arguable that they are all roughly contemporary and that the type 2 grave was excavated to a greater depth than types 1 and 3. Similarly it will be shown below (Ch. VII) that the undoubted neolithic burials are in all cases in close proximity to the settlements, if not the houses. It seems strange to find them here in a regular cemetery. Taking all considerations into accounts it seems reasonable to conclude that all the burials are roughly contemporary, that Type 2 are slightly earlier than type 3, and that type 1 are survivals of the neolithic site, roughly contemporary - here with type 3 and showing some modifications from the genuine neolithic burials as known at Piklihal and Brahmagiri. Burial customs die hard, and this solution does not appear in any way unreasonable.

The picture of the fusion of cultures which this group of burials gives is most graphic, and supports the excavational evidence of Brahmagiri. Here at one time we have three main social elements side by side: the neolithic remnants living partly in caves, using

stone tools and practising simple inhumation, the iron-using post-neolithic settlers with their strange complex burial customs, and the Aryan elements possibly mainly Buddhist, the representatives of the governing class and its servants and followers, living in brick houses in organized towns, and practising the Aryan rite of cremation.

Site No. - Maski-Myārdarhāl track. Munn showed in the map appended to JHGS II Pt. 1., a circle grave site immediately north of the Banjara huts near the fourth mile~~x~~ from Maski. I searched the area and was unable to find the graves. The area is a stony waste, of great poverty, and it seems unlikely that there can have been cultivation there or any settlement in ancient times. In the fields north of the village there are a number of large field cairns, some rising to a height of 4' 6", and it is quite possible that these were mistaken for genuine graves.

Site No. 87. Maski-Lingsugūr Road. The site lies on the top of a small outcrop of quartz about $\frac{1}{4}$ mile NE of the 9 mile 6 furlongs stone, from Lingsugūr to Maski.

On the north side of the hilltop is a flat platform yielded a number of microlithic artefacts of quartz, including blue quartz, and one of chert. The implements have very little in common with the Microliths of Maski, Billam-
 rayan gudda, Piklihāl etc., but resemble those from
 Kalahalli, Lingadhalli etc., in Mysore⁹. The bluish

quartz is famous for its gold content, and indeed there are several ancient gold workings within a mile of the place. The artefacts are mostly crude blades and flake scrapers.

The same hill-top has at least 4 graves. These graves somewhat resemble that first described by Munn at Site 8. They are cist circles of distinct type. The northernmost example is the finest; it consists of a square platform of smallish stones (up to 6") 33' x 36', and built up to a level of about 2' above ground. Inside this is an outer circle of rectangular blocks of red syenite stone, inside this again there is a flat layer of kankar of 3' width. I first mistook this kankar for 'ash' but further investigation has shown it to be a calcareous substance, presumably brought to the spot from one of the deposits that occur in the region of junction of Dharwar schists and gneisses. There is one regular rectangular block of this material in the outer (red syenite) circle (see plan, Pl 26,1). Inside the circle is a roughly rectangular cist of large blocks of granite, the largest being about 6' in length. The cist extends about one foot above the platform. There is no trace of a capstone, nor of a porthole. The internal measurement is about 8' x 9'. There is an entrance SSE, 2' wide, and happening to align perfectly on Maski hill (i.e., it is about 22.5° east of south). The other graves have a similar alignment. The second grave is entirely of granite, and there is now no

trace of an 'ash' circle. Also the platform is nearly circular. The other two graves are similar. (Pl 25, a, b, 26, 1-3)

Site No. 49. Mudgal-Lingsugūr Road. East of 9th mile stone. Munn first mentioned circle graves at this site. The present survey revealed it to be on a southern slope, about 800 yards east of the road, and north of one of the tributaries of the Maski nullah. About 40 graves were found; they are mostly very close to each other and vary considerably in size and form. The smallest are tiny cairns of stones of about 4' across and a mere 9" in height. Others take the form of small circles of rough large boulders, often with cairns in the centre, although it is quite possible that the cairn-size has been increased since the completion of the grave by cultivators dumping pebbles from the adjacent fields. These graves are between 7' and 15' in diameter, and account for three-fourths of the total number. The third group have a squarish or near-circular form and vary from 20' - 40' across, with a square or rectangular cist in the centre. The cist is in some cases on a southern alignment, but this was not always clear. In at least one case there is an entrance way, with width of 1'9" and a capping lintel over the entrance-slabs. The cist was 7' x 5'6", whilst others measured were from 5' to 6' square. Close to one grave was found a microlithic blade of jasper, whilst a rectangular granite saddle-quern was also noted in a similar position. Several red-and-

black (Bl) ware sherds were recovered from the vicinity.

An interesting feature of the site is a series of field terraces built skillfully across a depression which drains into the nullah. One grave actually appears to lie on the made-ground of a terrace and must therefore post-date it (see plan, Pl. 376). There are further traces of contour terracing running right across the grave area.

At the foot of the hill the nullah has been dammed anciently, although the dam is now destroyed and breached. There are traces of terracing on either bank, but no pottery was found in the area.

Site No. 50. Mudgal-Lingsugūr Road. Munn showed a second site on the west of the road, a little further south. Prolonged search failed to disclose its whereabouts, although traces of 2 or 3 very dilapidated graves (?) were found about $\frac{1}{2}$ mile north.

Site No. 91. Piklihāl, near Mudgal. An account of explorations at this site are included in the following chapter. It may be mentioned here that the site is one of the major neolithic sites of the area, whilst the post-neolithic remains of 'megalithic' type are also outstanding. In the conclusion to this section, use will be made of material from Piklihāl.

Site No. 7. Billamrayan gudda. Foote first reported the site, which he regarded as purely neolithic, with the

settlement on the southern side of the hill. Munn noticed circle graves close to the hill, rock bruising, and large numbers of neolithic artefacts, and the Archaeological Department first drew attention to microliths. In spite of this attention no unified description of the place and its potentialities exists, nor does a detailed account of the graves, and I therefore decided to resurvey the hill.

The hill is about 200' in height, and lies about 3 miles west of Lingsugūr cantonment, and one mile west of Kadkal village. Although it seems probable that regular occupation of the site ceased when Kadkal grew up, there are remains of a walled and fortified village on the north of the hill. This is of fairly recent date.

Medieval. To the north side of the hill are the stone walls of a fortified medieval village. These remains include a walled enclosure on the top of the hill, connected with the foot by screening walls. Inside the village wall there are a small shrine and a well, within a courtyard. These closely resemble the decoration and construction of parts of Kadkal village. The well is stone lined, and lies to the east of the shrine. There are numbers of house foundations of stone. The pottery collected in this area is typical coarse grey (D) ware, the forms also resemble medieval sherds from other sites in the district. (Pl. 65).

Pre-Medieval and Post-Neolithic. No remains of definite Sātavāhana association were found, and perhaps the settlement had already shifted to another site by this time. Two or three sherds of much comminuted red-and-black (B2) painted ware were found together with red-and-black (B1) sherds and decorated red slipped ware (B3) in the area of the fortified village.

All around the base of the hill there are number of little terraces and platforms among the boulders. These yielded small numbers of red-and-black sherds, and more were found on a level terrace half way up the northern slope. Quantities of iron slag were also found. The post-neolithic settlement must have continued in much the same areas as its fore-runner.

Neolithic. The association of the hill with the neolithic period was made by Foote because of the large numbers of artefacts and the quantities of coarse pottery. Careful survey of the terraces around the hill, but particularly on the north and west, revealed the presence of large numbers of microlithic blades, cores, flakes and points; part of a lunate was also found. These (Pl. 105) are conformable in general type with those from Maski and elsewhere. They are made of a variety of imported stones, such as Krishnamurti reported from Honhalli, (see above p. 72), and have been found at Piklihāl and elsewhere. Foote

Munn and later the Department, collected large numbers of Neolithic axes in the area. Munn alone collected several hundred, whilst the later search resorted to quite indiscriminate 'celt hunting'. There are still, nonetheless, celts to be found around the terraces and this abundance may indicate that the site was anciently a factory. It is therefore interesting that it lies about 2 miles N. of a great dolerite dyke. Several specimens were illustrated by Munn in JHGS II Pt. 1., and further examples from the collection of the Department are in Maski Museum, from which a selection was made and photographed (Pl. 966). Whilst exploring the site it became apparent that there were large numbers of waste flakes of the raw material of the axes scattered around the terraces (Pl. 100). Examination and collection of these revealed the interesting fact that many bore use marks, and that many were of regular blade form, and made in the same way as microlithic blades, from a carefully prepared core. As with the microliths, many have point or bulb removed, and as with the microliths these were often found separated from the blade. About half bear patination, but it does not seem possible to divide them from the other neolithic finds on this ground. Subba Rao associated the heavily patinated flakes with Phase I. at Sanganakallu, and it is to these that the series collected here most closely relates.¹⁰ It is however clear that these flakes are not mere waste, but have been made with definite intention and used, although

they may be incidentally the by-products of celt manufacture. Among the pottery collected are sherds of heavy grey and buff (A) ware showing signs of beating, with distinctive rims, 2 including finger tip decoration, and two grey ware perforated sherds, all of which can be closely compared with examples from Brahmagiri, Sanganakallu and Piklihāl, neolithic levels. The rocky hill slopes contain numbers of small caves and rock shelters and it is quite possible that these were occupied anciently, but none of those I found at this site show any clearly undisturbed deposits. The rock bruising of Munn are mostly high up on inaccessible rocks. It seems likely that the major occupation was from the start on the little terraces. (Pl. 15a).

Grave sites. Both sites reported by Munn were found, as were a number of additional graves. The first group of three lie east of the hill near the Kadkal tank. Two were square platforms of 22' and 20', with the outer edges built up of boulders of up to 18", and pebbles forming shallow cairns inside. One had in addition a tiny cist, formed from three stones about 1'3" square. The third took the form of a square of boulders of about 55', but with no other traces of stones visible inside.

The second group lies further W. and about 200 yards SE of the hill. Between it and the hill the area is strewn with smallish boulders, alone and in small groups, and this area appears suggestive of some sort of conscious layout

but without small scale excavation no further deduction is possible. One grave was a simple oval 9' x 5' of rough stones. There are two clear cists without capstones, inside circles of roughly squared boulders of 30' and 27' diameter. One of the cists had a single stone dividing it into two equal compartments, across the short axis. Two more cists were noticed in much damaged condition, but generally of similar type. These graves resemble those of the Maski/Lingsugūr Road site No. 87. Two further simple stone circle graves were noticed.

Site No. 41. Lingsugūr, Tank and Cantonment area.

Munn found some 9 graves in the bed of the tank whilst it was dry. These conform with the type of site No. 87, and plans of the more perfect specimens are given (Pl. 24). Munn also reported graves to the west of the talukdar's office, and further south-east. A search of the area north of the great dolerite dyke that runs EW to the south of Pelipenta hill and the cantonment revealed in all about 35 graves, whilst two further graves were found on the edge of the tank not marked by Munn on his plan. An unusual feature of the graves is the large area of ground covered by them as they lie scattered over a distance of nearly 3 miles (if the Billamrayan gudda graves be accepted as the extreme limit of the series).

1. South of Huligud, and N. of the dyke there are remains of about 12 graves in the rocky waste land. They are mainly rough circles of stones 8' - 15' in diameter, and

having cairns of stone chips and earth in the centre.

2. About $\frac{1}{2}$ mile SE of the talukdar's office there are about 10 graves west of the track. They consist essentially of circles 14' - 22' diameter, with cairn of pebbles and chips of stone. In two cases there were traces of a central cist. (Pl 23b)
3. Near the old bandstand mound on the east of the tank are two more graves, square outlines of stones c.15' with central circles and in one case additional 'ash' circle.
4. In the field S. of the old Contingent Mess and W. of the talukdar's office, there are traces of 13 graves at least, but all are very much damaged. Two have square platforms and others may formerly have had them. One is a simple cairn circle 22' in diameter. Two are oval in form 30' x 10' with a southern entrance. Two more are contiguous circles in NS alignment. The majority have been further obscured by large modern field cairns built over them. ^(Pl 23a) Thus the two square platform graves were either half or almost entirely obliterated. The clearer was about 40' x 32' with a twin line of smallish slabs for the square. Inside this was an 'ash' circle, and in the centre a cist of large thick slabs, with southern alignment of entrance, but no capstone (see Pl. 26, 4)

General: Sites of the Maski-Mudgal-Lingsugūr area.

Certain conclusions can be drawn from the close prox-

imity of major sites. As the settlements have been described in detail, and as they fit rather into the wider context they will not be further considered at this juncture. The other remaining sites are almost all graves and it is possible to classify them as follows:-

1. The most distinctive grave is the circle on square platform with cist composed of thick rough slabs without capstone or port-hole, usually with kankar or 'ash' circle, with entrance-way on general south to south-east alignment. A refinement of this type appears to be the use of red syenite stones for some component part of the grave, whilst a simplification is to disregard the outer square platform (Pl. 26^{1,2}). (A4).
2. Is an orthodox type of cairn circle, corresponding with some of those excavated by Meadows Taylor, but with no visible trace of cist which may be buried or not. Circles of this type are of diameters 25' 18'. The circle may be double, and in a number of cases has traces of a smaller easterly cairn of stones within the inner circle. (See Pl. 49 , Piklihāl). Several circles may occur in an enclosure of small stones. (B)
3. A Hybrid of A and B is the circle with or without ash scatter and cairn, and with an enlarged courtyard on south alignment (Pl. 48 Piklihāl). (A5).
4. A degeneration of A is a platform with double square

of small stones and central 'ash' scatter but no trace of circle or cist. (B1). (PL 48)

5. A degeneration of B are circles and ovals often with south alignment of 8' diameter, or about 11' x 7', sometimes with trace of alignment on N/S line. (B2).

IV. Miscellaneous Sites: (a) Settlements.

One of the aims of the writer was to see how far it was possible to analyse the relative size and importance of the major settlements in the district at different periods. In the course of the exploration a number of new sites were discovered and some of these are among the most interesting so far reported in the district. The following sites lying outside the three groups mentioned above are nearly all in the central part of the district, bounded on the east by Raichur, and the railway, and extending as far west as Kopbal. The Yelbarga taluk~~was~~ was not covered by these explorations. The sites are here given roughly in order of magnitude, market townships coming first, and village sites after. It must, however, be stressed that this order is not final, as different sites seem to have flourished particularly in different periods, and it will be left to later chapters to analyse, as far as is now practicable, the relative age and development of the various settlements of the district.

Site No. 36. Kopbal. (See Pl. 39 for plan of area).

The discovery of Asokan Minor Rock Edicts at Kopbal demonstrated the existence of the site in Mauryan times, yet in spite of this and of Yazdani's subsequent suggestion that the megalithic remains of Malimalappa hill might be dated to roughly Mauryan times; no archaeological survey of the area has yet been published, or indeed, undertaken. The present survey aimed at suggesting the general areas and periods of occupation, and the results will be loosely classified accordingly. It should, however, be noted that here, as elsewhere, the resulting classification does not mean that materials other than dateable, can be classed strictly in any period, but often that spatial proximity or probability suggest rough contemporaneity.

General. The Kopbal group of hills is one of the most extensive in the district. Rising sheer from the surrounding plain they rise to almost 600' in the Pālkigundu hill, and 550' in the southernmost hill. Several caves were discovered and indeed the rock here seems to favour the small cave and rock shelter. The Pālkigundu rock is as its name implies, a vast canopy, giving a fine view of the surrounding countryside. The Hire Halla ceases to flow in the hot weather, but is identified by Krishnamacarlu with the great river on

whose bank the Chola Rājendradeva defeated the
 Chālukya Āhamavalla Somesvara I in the 11th century. 11.

Medieval. Medieval remains are to be found in the fort and parts of the village directly to the east. They are also to be noted in the inscriptions and religious sites around Gavimath, and also near Pālkigundu. It may be noted that the modern town is situated about $1\frac{1}{2}$ miles from the Hire Halla stream. Medieval grey (D) ware were noticed in quantity around the fort area, and to the west and east thereof. More surprisingly they occur also in caves on top of Malimalappa (q.v.) where their presence may be taken to indicate the habitations of Sādhus or Jain ascetics.

Pre-Medieval. Under this heading are included remains that clearly indicate S'atavāhana contact. The most obviously rich settlement area is that around the N.E. corner of the fort., and probably extending under the adjacent village. In the fort enclosure there is a quantity of remade ground (of medieval date) which is rich in traces of disturbed occupation. There are, however, still houses within the curtain wall of the fort, and any excavation would be difficult. Finds included fine black sherds (later identified as C2 'rouletted' ware) although none with roulette were found at this spot, two fine red polished (C3) spouts

(The fort
 area)

of the type familiar at Kondapur, numbers of wheel and rosette pattern applique decorated sherds in red (B3) ware, shank-shell beads and bangles, and the foot of a hollow (press moulded) terra-cotta of the Kondapur type. A crucible, comparable to those from Chandravalli was also found. None of these finds came from stratified deposits, and I could find no trace of any here. Few finds were made of red-and-black (B1), or red-and-black (B2) painted wares in this area (see Pls. 1-2).

(W. of fort) In the valley to the W. of the fort, I found a deposit of about 2' of potsherds, also apparently not in original position, at the bottom of the now dry tank in which a shallow well had been cut. These included red-and-black (B1) ware sherds. North-west of the fort along the eastern slopes of the hills there are traces of (?) terraces at the foot, and these produced several sherds of red-and-black (B1) and numbers of red-and-black painted (B2) sherds. It is not, however, clear whether these sherds did, in fact, indicate occupation at this level, or whether they had been washed down from above. Further

(N. of west, almost due north of the Palkigundu, at the foot of Palkigundu) the hill there are more terraces. There are several natural caves in the rocks behind them. Although these produced no recognizable sherds, excepting comparatively modern, the terraces were at one place cut by a nullah, and in the section of the bank I found a (?) rubbish pit

that produced sherds of red-and-black (B1), and red-and-black (B2) painted wares, including two sherds of (B3 ware) bowls with roulette marks (Pl. 11, 15).

(N.W. of
Palki-
gundu)

Proceeding west along the foot of the hill, and then S.W. over the saddle there is a wide well-defined path, banked with stones on the outer side, and made-ground. Before ascending the saddle there are 5 or 6 probable graves, rectangular in form and about 9' long, with an outer wall of rough boulders, and inner filling of smaller pebbles. There is no means of ascertaining their age, but they are probably medieval. On the slopes there are 2 traps for borbacca (panther), made of stone: these traps are to be found at a number of places in Raichur, and a note will be included in the Piklihāl chapter. The hillock to the N. of the saddle includes a large natural cave, on its S.W. face and the roof and walls of this bore traces of a number of paintings. In whitish pigment outline there is a group of elephants, and another animal (?) nīlgai in solid. There is also a long horned (?) chītal deer in red ochre with hatched body. A further group of men and animals in white is very indistinct. Also bruised on the roof was a nāga pattern. ^(Pl. 113) The cave produced some wood ash and sherds of blackish (D ware) pottery. The top of the hillock has a large number of natural caverns, but they produced no sort of antiquity, but one contained engravings

of Saivite sectarian signs. (Pl. 113). The broadway continues to the S.W. along the foot of the hill. There are here, ample evidences of a considerable area of made ground, partly cultivated, and partly terraced. There are also traces of a cleared way up the steep hillside to the S.E. onto the level ground S.W. of the Pālkigundu. To the west of the lower plateau, there is another small hillock (N.E. of Malimalappa) and on the plain below there are small traces of some occupation, and a number of nondescript potsherds, whilst in the cliff behind there are some rock shelters, in one of which were paintings, in white pigment, including a small human figure. About 200 yards N.E. are stone wall-foundations and a vīra kal, and nearby, and to the west, two more rectangular graves of stones. These remains are probably all medieval. On the summit of this hillock there is a large overhanging rock cave, and several smaller caves, together with a small natural plateau surrounded by rocks. This picturesque region produced a few much weathered sherds of reddish (?B) ware.

(N.E. of
Malimal-
appa)

(W. of Mal-
imalappa)

To the S.W. of this hill, and about $\frac{1}{2}$ mile N.E. of the village of Mangalāpur, there is, at the foot of the rocks, in a little recess, an extensive area with traces of settlement. Here, large numbers of red-and-black (B1) sherds, red-and-black (B2) painted ware, and fragments of iron slag were recovered, as well as a few

sherds of medieval (D ware) type, closely comparable with the cave finds of Malimalappa. In one area fragments of several large dull red-brown urns (B3 ware) and pieces of burnt bones were found, having been brought to the surface by ploughing. It seems almost certain that these constitute relics of urn-burial of the type known from Maski. This site is less than $\frac{1}{2}$ mile from the Hire Halla. A short survey of part of the nullah bank near by did not reveal any remains, but this settlement should be properly explored, as constituting the most extensive settlement area outside the fort, and being almost certainly earlier. (Pl 39)

(Malimalappa)

Post-neolithic. It is probable that many of the areas already described should more properly be included in this section. The settlement area N.E. of Mangalāpur is almost certainly the principal pre-Sāta-vāhana settlement at Kopbal. This fact is supported by the closeness of the grave site on top of Malimalappa hill. At the base of the hill and S.E. corner, there is one probable stone circle grave. The top of the hill forms a plateau of about 150 yards by 50 yards. It is bounded by great rocks that are generally higher than the plateau level, and give a shut-in or 'castellated' effect. At the west end of the plateau there is a small

tank, made by taking advantage of the natural rock formation and banking earth and stones to form a bund. (Pl. 126) This resembles closely the Benkal and Bilebhāvi sites. To the west again there are some caves in the rocks, and careful search revealed a large quantity of pottery. There were, however, very few sherds of red-and-black ware, or comparable B wares. All the remaining sherds were of a grey-black hard fired body, without slip and wheel turned (D ware). The finds of comparable sherds that have been recorded elsewhere in this report make it seem certain that the ware is a medieval one. The significance of quantities of large sherds, here and at the Anegundi cave site, is not easily explained, for from one of the excavated cists referred to below, I obtained some sherds of red-and-black ware. (See Pl. 73 for pottery finds).

The graves themselves are mostly built in the soil that covers the plateau. It is noteworthy that this soil has been conserved by some slight terrace walling. There are about 40-50 graves in all, but the disorder is such that an accurate estimate is impossible. All that were clear were on south orientation. The clearest was a cist without porthole; it was surrounded by a circular wall of square slabs of stone, reminiscent of

of Brahmagiri; the cist size was 4' x 5' and the external measure of the circle was 16' diameter (Pl.——). There are a number of portholes, all south, varying in diameter from 10" - 15". Numbers of the capstones appear to have been broken. The largest complete stones were in two sections with overall measurement 6' x 8'. One curious grave appeared as a square of thin slabs, on their sides, with a small inner circle of stones of less than 1' size, and about 4' 6" diameter (Pl.——). The cist size in the few complete examples was small; one measured 18" x 2'. a number of the cists appear to have been excavated, in the near past, and there were several weathered sherds of red ware in addition to the red-and-black mentioned above. The stone slabs of the graves here resembles ~~those~~ of the Benkal sites in every way. One circle was of a different stone from the cist which it surrounded, being of blackish dolerite boulders, whilst the cist was of the usual gneiss.

To the S.E. of the hill, and half-way down the slope, there are more caves, one large, which produced a few sherds of unrecognizable red ware.

(Pālkigundu) The area of the Pālkigundu inscription (hill 2399') has also traces of ancient terracing and occupation. On the top of the hill there are several places where

the ground yields numbers of much comminuted and weathered sherds of reddish (B) ware. Close to the Edict rock there were also fragments of burnt brick, and one complete brick was noticed which measured 14" x 7" x 3". Also found were sherds of red-and-black ware and forms similar to finds from other parts of the site including two rims of bowls of the type of Kppbal No. 1., No. 18 and the base of a cup of the type of 16A. (Pl 86) Near the brick, I found part of a broken tile resembling the type known from Kondapur and Kohlapur. Tiles of this type appear to be of Sātavāhana date. This area needs further investigation and excavation. There are very few sites in the district that have produced burnt brick, and this makes a sufficiently novel feature (and one with many northern parallels) to merit further investigation. There are several hollows which suggest use as water storage tanks.

(Gavi math) The area of the Gavi math inscription produced no remains that were deemed noteworthy. The caves below the rock all seem natural, but are much disturbed by later use. The tank is also natural, in so far as it is without any built up bund, but the surrounding rock does not make it impossible that the area was quarried at some date. In one of the caves some coarse, ill-fired red pottery fragments were found. Their general

ware resembled that from the Palkigundu area.

Neolithic. In the course of the extensive explorations described above it is remarkable that no remains of neolithic or even microlithic artefacts were encountered. In the area N. of the fort a few quartz fragments were found that suggest the waste products of microlithic manufacture, but even these are not definite. It therefore appears likely that either the area of neolithic occupation was not found (in which case it is almost certainly in the area south of the track from Kopbal to Horatattanahālu or under the settlement N.E. of Mangalāpur) or that there is no such area. As comparatively little exploration has revealed traces of probable neolithic age at a large number of sites, it seems most probable that there is little or no neolithic settlement at Kopbal.

Site No. 86, No. 46. Mānvi (see Pl 36a). The great hill of Mānvi lies on the road from Raichur to Gangāvatī via Sindhnūr. Munn reported an ash mound N. of the hill and also an alignment a little way further north. The present exploration revealed that the main town site and fortified area has a long history going back at least to Sātavāhana times. The hill is more accurately described as a chain of three, joined by two

saddles. The town lies north of these saddles. In the northerly one there is a large tank with stone bund, and above this, on the hillside are two temples. The southern saddle is part of the fort, which in its present state dates from medieval times. (The fort of Mānuva is mentioned as destroyed in the Raichur inscription of Vithala-nātha (c. 1294 A.D.).¹³ (PL12a)

Pre-medieval. The lower parts of the fort include a number of platforms of made-earth with retaining walls of stone. These platforms are south of the town, and slightly east of the eastern saddle. The whole area is used today as an earth pit and there are several sections revealed of up to 30' deep. Although these appear to be unstratified dumps, they contain a great deal of pottery, and although much is medieval, a fair proportion is earlier. I obtained numbers of sherds of black, black-and-red (B1) and black-and-red (B2) painted sherds from one part of the face, whilst a new form of painted ware with red slip on a coarse grey body with finger decoration in pink occurred.^(PL76) This type of painting is so far not paralleled from any other site, whilst the form appears to be that of a mridangam (see below p. 322). In the area south of the town, and across the easterly saddle there is an extensive series of terraces and made-ground fields. Here, although many of the remains

are undoubtedly medieval or modern, were found a few sherds of red slipped (B3) and red-and-black (B1) wares. This little series of fields, well planted with trees, provides a most striking contrast to the plain S.W. of the hill. Further west, and around the next height there is a series of smaller terraces which extends to a considerable height on the hillside. These terraces have a close resemblance to those of Kopbal. On them were found the remains of about a dozen circle graves, the largest of rounded boulders of 18' diameter, and the others 6' - 8' diameter (or as little as 4'6" in one case) and of irregular or angular boulders forming small circles or ovals. There were also 4 or 5 small natural caverns under great rocks, some of which had remains of piles of small stones forming an entrance wall, or even in some cases filled with small stones. I infer that these are probably graves. (They are reminiscent of those described¹⁴ by Beazely in Mysore.) The terrace system has largely broken down, and in some cases the stone 'circles' referred to are now on bare rock, with scant traces of the original soil surrounding or covering them. The caves can be compared with those of the Benkal site 6, whilst the small oval/circle type of grave resembles those of sites 56, 81 etc. The terracing continues through the western saddle until the medieval temple is arrived at.

A little north of the town and the road is a small group of quartzite rocks, and on the north and east of these are traces of ancient activity. This seems to be the site identified by Munn as an alignment (Site No. 21). Finds included a piece of dolerite bearing use-marks and polish apparently used as some kind of side scraper, a section of a microlithic blade of jasper, a collection of crude quartz flakes possibly by-products of microlith manufacture, and a few sherds of indefinite pottery. Several pieces of iron slag were recovered, and a rim of a bowl of schist. This is the only specimen of this type of vessel found in the course of the present exploration (Pl. 76). There are a number of largish stones mostly fallen, and some used for field walls, but the alignment identification must remain uncertain.

The ash mound mentioned by Munn lies to the west of this site near the angle of the hill.

Site No. 57. Rodalkunda (see Pl. 386 for plan). The site was first noticed by Foote, whose description is mentioned above. The hill is a typical rocky outcrop of gneiss, islanded by blackish grey soil verging on the true cotton soil. Around the hill is a narrow strip of sandy soil formed no doubt partly from the decay of the rock, and partly by the wash-down process that still continues.

Above this strip, on the west, north and east, there are little terraces among the rocks, very much as at Billamrayan gudda. These produced one group of finds, whilst the site to the east yielded a distinct group. We shall consider the site period by period. (Pl.38b)

Neolithic. Foote mentions that there are few traces surviving on the top of the hill, and this seems correct. Around the foot, however, there are among the great boulders numbers of small areas that appear to have been anciently cleared and levelled. In many cases traces of stone terracing survive. These areas produced several fragments of neolithic axes, and also by-product flakes of trap, resembling those found at Billamrayan gudda (although here in smaller numbers). They also produced a few microliths of quartz and chert, and numbers of greenish diorite spherical rubbing-stones, of a type found also at Piklihāl. Several sherds of beaten grey and buff (A) ware, including rims that bear close resemblance to those found in Neolithic context at Piklihāl and elsewhere, were obtained from this area. One of these is of the interesting surface texture that suggests a transition from neolithic A to post-neolithic B wares (A5). (Sherds of similar ware were found at Maski, Piklihāl, and Billamrayan gudda in the district). In this area were found a number of red-and-black (B1) ware sherds, that provide the main evidence for the post-neolithic period. (Pl.57).

Pre-Medieval. To the east of the hill, and slightly north of the saddle that divides it from the tiny southern extension there is a quite considerable village mound. This resembles closely the mound of the early remains at ^{15.} Brahmagiri. It yielded large numbers of red-and-black (B1) ware sherds and also the red-and-black (B2) painted ware. It produced red slipped (B3) ware and the same ware decorated with typical impressed decorations. The same area produced part of a conch shell bangle, a fragment of a dull blue glass bangle, and several pieces of iron slag.

Medieval. The medieval village site was almost certainly for some time located on this same mound, for sherds of coarse grey hard-fired D ware pottery occur there, and the fine stone paved rain gully connected with the stone terrace of the saddle probably dates from this period. Similarly the little tank of stone at the foot of the eastern slope further north must almost certainly date from the slab inscription set up by its bank. This inscription was photographed. It appears to resemble ^{16.} closely the script of the Munirabad inscription, and may therefore be assigned to a roughly similar date. The fortification on the southern hillock is later, and it is perhaps to this period that the movement of the village slightly southwards to ~~its~~ present site must be ascribed,

together with the two shrines of Ranganātha on the hillside, although these may well mark the sites of earlier shrines.

General. No grave sites were seen, but it is noticeable that the field boundaries to the west of the hill are often composed of large boulders and it is possible that graves have here been ploughed out in recent years.

Site No. 30. Kallūr (See Pl.37a for plan).

The present survey at Kallūr was restricted to the exploration of the valley between Marteshwaraguda and Hanumāndevaguda hills, i.e., west of the modern village site, as it appears to have been the central settlement area in ancient times. The remains found suggest that there was continuous occupation of the site until modern times.

Medieval. The village at present is walled, and has other buildings which suggest a medieval origin, including a temple inscription of probable Chalukya date. To the west of the valley there is a substantial stone terrace and a dark alluvium has accumulated behind it. Here I found a fragment of a grey schistose stone male figure, being the right shoulder and part of torso, suggesting a Jain image. I date this and the terrace

wall to a medieval origin. High up on the hillside of the valley there is a series of terraces that will be mentioned below. These are partly of medieval date, and there are traces of stone foundations that may also be. There are also several caves on these slopes, and in one of these I found numbers of sherds of a hard buff (D) ware, closely resembling that from Malimalappa hill at Kopbal (q.v.) These sherds are clearly medieval. (Pl. 69).

Pre-medieval. Remains of Sātavāhana date have been commented on above in the account of previous excavations. I found much pre-medieval pottery around the foot of the hills, on either side of the valley. Here there are remains of numbers of shallow terraces, reminiscent of Brahmagiri, and sometimes with traces of stone house-foundations. Finds included several (B3) red slipped sherds and coarse pink ware without any slip or polish (B4). (Pl. 68): also one micro-lithic flake of chert and a much battered neolithic axe of dolerite: also several conch shell bangle fragments, and one of blue glass, resembling similar finds at Maski. It is impossible to tell how far this site extends under the alluvial deposit referred to above.

Post-neolithic. On the hillside to the north there are further terraces that rise to about 200'

above the surrounding plain. These have fine rough stone retaining walls and are remarkably well preserved. The date of much of this work may well be later, but there is no doubt that the site was previously occupied. On these terraces I found several microlithic flakes, and one fine core of chert showing ultimate use marks as a scraper. The area also produced large numbers of red-and-black ware sherds, and one discoid magnesite bead.

Neolithic. Apart from the finds already listed, I found several gneiss rubbing stones, a quern and a small number of sherds of buff and grey (A) neolithic wares, one at least incised (Pl. 68). Two more sherds were of the grey and black burnished (A5) ware noticed also at Rodalkanda (above p. 200).

General. South of the settlement and to the west of the hill are two small surface drainage tanks at the foot of the slope. No trace of any graves survives. It appears that occupation of some sort or other continued on the lower and upper terraces from neolithic to post-neolithic times, and sporadic occupation of the upper terraces may then have continued until at some later date the hilltop was reoccupied, possibly as a look-out post, whilst the village moved eastwards to its present location.

Site No. 59. Sirwar. Previous exploration had not revealed any site in the proximity of the modern village, which lies to the east of the 1616' hill, but neolithic artefacts were found about 1 mile S.W. of the village. Careful survey of the 1616' hill, and also of the rocky outcrops to the west did not reveal any traces of ancient settlement, nor of any neolithic or microlithic artefacts. The present village site appears to be comparatively modern, but to the west of the 1616' hill, and in the centre of the flat ground separating it from the rocks, there is a slight mound. It is not possible to tell how far this is natural, and how far artificial, but the surface of the mound - which is now ploughed and cultivated - yields large quantities of pottery, and other traces of ancient occupation. It suggests that this was the original village settlement, and that it was of considerable size. The remains appear to be pre-medieval and medieval, and will be considered in this sequence.

Pre-medieval. One fine rim of red-and-black (B2) painted ware was found and a number of plain red-and-black (B1) and (B3) ware sherds and rims, including several distinctive forms (Pl. 84) and decorative motifs, although none suggesting any definitely earlier period were found. There were also several pieces of conch bangle, and numbers of fragments of green glass bangles.

Part of a coarse clay crucible, and a lump of scoriaceous slag were found as well as a cylinder of bronze about $2\frac{1}{2}$ " long and $\frac{3}{4}$ " diameter.

Medieval. Numbers of sherds occur of coarse grey (D) and red ware without slip or dressing, and of forms that appear unlike those associated with the pre-medieval periods at other sites. Until a site of this type is excavated it is possible only to suggest that these may be late, Pre-medieval B, in part and medieval in part. (Pl. 68). Several fragments of yellow glass decorated bangles were recovered.

Site No. 35. Kavital. Foote found neolithic artefacts in a field near the hillock south of the village. To the west of the village is the mound with temple on it described in the ARHAD report (see above). This mound appears to be more correctly related to the following observations than an ash mound.

Immediately west of the village there is a considerable area that has been built up with a surrounding fortified wall. The area is now largely deserted, although the eastern parts are still covered by the modern village. This area seems to be the earlier village site, and at one place stratified occupation deposits of 15' depth were revealed by the modern earth

diggers. To the west again of this mound, at the foot of the gneissic hills that dominate the west and north of the village, I found a solitary and broken neolithic axe. The mound seems to be pre-medieval B and medieval. The great part of the pottery found was of the latter period, but little of it was collected. Of the earlier period numbers of red, black-and-red, and black sherds were found among which certain forms occurred which are comparable at other sites of late, pre-medieval B date. (Pl. 70). Some forms occurred, particularly in black, and often with a thick treacly surface, which seem to be close in ware to the unpolished medieval D wares. (Pl. 70). A fine multi-coloured glass bangle was found which compares closely to bangles of Bahmani date from ^{17.} Kolhapur.

The site thus would appear to be roughly similar in age to Sirwar.

One other interesting object was a fragment of a flat terracotta disc of reddish colour, decorated with an outer impressed pattern, and of $\frac{7}{8}$ " thickness. Both sides were decorated, the one side strikingly suggesting a roundel of about 13" diameter. This curious object may have been a lid for a storage jar.

Site No. 32 and Site No. 88. Karatgi. (See Pl. 38a for plan)

The site, which was first noticed by Munn, lies about

400 yards N.W. of the modern village. The latter lies to the E. of a medieval fort, and produced a small inscribed stone capital, and two or three figures carved in a schist, which Munn collected and placed in the compound of the Inspection Bungalow. The fort is ruined and now deserted. The whole area lies on the open rolling ground above the Hire nullah which passes several miles to the south-west. Although there are many little rocks which appear as islands of sandy red soil in the surrounding grey-black, the whole site is flat and open and thus appears in striking contrast to (for example) Rodalkunda. The pre-medieval remains are richest in the vicinity of the main road by a small muslim graveyard.. There is a well close by. From among the graves there protrude several house-floors of beaten earth, and these produced large numbers of red-and-black (B2) painted sherds. A few feet north there is a track that runs away to the N.W. This is sunken several feet below the fields on either side, and the sides of this track produced many more painted sherds. The surface of the field to the north is also littered with sherds, mainly red (B3 and D), often without haematitic slip or polish (B4), but some decorated with impressed motifs. The number of painted sherds rapidly decreases to the north and west, although the field for several hundred feet north-west from the graveyard produced numbers of

potsherds. Finally the line of the Tungabhadra branch canal passes in a N.E. direction, and reveals several hundred feet of cut section, the upper two feet of which is thick with sherds, very few painted B2 or plain red-and-black B1 or 3 ware, but including numbers of forms reminiscent of pre-Medieval forms from other sites in the district (Pl. 69). At two places here could be observed the now crushed remains of large urns similar in type and ware to those from Maski (Sultan Mohammed's field). There did not, however, appear to be any traces of ash or bones, although numbers of bones of sheep and cattle occurred in the layer. The canal bank produced the curious buff conical lid and a large knob of similar ware (Pl. 69).

I conclude that the site was occupied from pre-medieval A to early medieval times, and later the settlement moved to a site closer to the fort.

At a place 2 miles west of Karatgi is a group of large rocks forming a number of caverns. This group lies on the track to Challūr, and corresponds with the 1496' mark on the $\frac{1}{2}$ " map. There is an inscription on the rock in a late medieval script, together with a chauri and triple umbrella whilst in the interior of the shelter there are some rough human figures in red

ochre outline.

From Karatgi I visited a number of bare isolated hills of schist lying to the S.E. of the village, and known as ^MMori gudda. They are singularly sterile, and bear no ancient traces beyond the stone walls and a few house foundations of a little medieval stronghold on one hill which is still remembered as being named Timmapur. The headmaster of the Budguppe school suggested that the name Mori gudda might be derived not from Maurya, as has been suggested, but from a Canarese word 'mori' meaning a boundary.

Site No. 92. Potanhāl. The village of Potanhāl lies on the main road from Gangāvati to Raichur, on the east bank of the Maski nullah. The country is open and there is no trace of any hill. The modern village straddles a slight mound which appears to be all the greater because of the earth rampart around the village perimeter. Inside this are stone walls. The upper parts of the mound yield typical grey sherds of medieval (D) ware (Pl. 82) but at a lower level, along the riverside of the mound, red-and-black (B) ware, and red-and-black painted (B2) sherds were found as well as conch shell bangle fragments and a typical lid form. A yellow glass decorated bangle fragment was found.

It seems therefore correct to assign this settlement a period of occupation from pre-medieval times to the present day.

Site No. 90. Nirmānvi. The sites investigated lie about 5 miles N.E. of Mānvi on the main road to Raichur near the 15th milestone. North of the road is the 1556' hill with two peaks and an intervening saddle. The southern slopes to the saddle have terraces right up to the saddle, whilst the northern side is too steep for any. A terrace wall has been built across the north side of the plain ground in the saddle. On this ground are the stone foundations of 4 rectangular houses, two of which are at right angles with the corners nearly touching. There are traces of further stone foundations in front of several low rock caves, but they have suffered much from erosion and other causes. On the western peak about 75 yards from these remains are some large caves, but fairly open, and the floors have suffered from the effects of the weather. A few sherds of grey and buff ware of probably medieval date were found in the caves. North of the hill, at the foot, there are two circle graves of rough boulders of about 12-14' diameter.

South of the road are further traces of settlement,

and large quantities of iron slag. Several B3 ware sherds were found on traces of terraces, as well as red-and-black (B1) ware sherds. These sites I assign to medieval and pre-medieval date, and regard them as a small settlement.

Miscellaneous Sites b) Graves.

Site No. 25. Hunkunti (Hankunti). This site is on the banks of the Tungabhadra and opposite to Hampāsāgar. It was first noticed by Foote who mentioned a bed of mostly broken pottery along the regular alluvial bank of the river, from which he obtained red and red-and-black ware sherds. Some distance N.E. of this site he found a group of graves, which yielded red-and-black painted wares and the sherds that were reconstructed to produce the strange elephant footed urn.¹⁸ Subba Rao found palaeoliths in the gravel beds on the southern side of the river, and found east of the village, a long mound which seems to have formed a considerable settlement. This he dates by the presence of quantities of red-and-black (B2) painted ware sherds, and probable similarity to the other riverside settlements. He further associated the graves on the Hyderabad bank of the river with this settlement. (P1366)

Approaching the site from the N.E. via the village of Hunkunti (correctly Hankunti) two stone menhirs are seen in the middle of the village. One is about 10' high, the other 8' with a circular hole pierced through it near the

top. The grave site lies about 1000 yards S.W. of the village, and generally over 100 yards from the present bank of the river. Beyond the graves I could find very few traces of the scatter and bed of pottery referred to by Foote. There were scarcely half a dozen isolated sherds to be seen over several hundreds of yards. It is, however, possible that this section of the bank may have been eroded since Foote's visit, although it appears unlikely.

There are, as far as can be estimated, more than 100 graves, all in an interesting relationship to the ground formation. It appears that the bank level at the time of the construction of the graves was about 2' lower than the present level of the surface. The soil was a blackish cotton soil, about 4'-6' in thickness, and rested on the riverine gravel or conglomerate which continued to considerable depth in the exposed sections of a nullah. This gravel is evidently that in which Subba Rao found the palaeolithic artefacts, and indeed I found on the surface of the exposed gravel below the bank one much weathered flake of similar type, struck probably from a prepared core with some retouch of the flake surface which included the removal of the bulb of percussion. This is the only palaeolithic tool found by the present writer in the district, and the first to be reported. Over the blackish soil lies a layer of orange-brown flood deposit of 2'-4' depth. At one place the sedimentary nature of this deposit was made

clear by its laminated structure, there being laminations of about 1/6" in thickness, whilst the evenness with which the layer was deposited was clear the whole length of the bank. Foote mentioned a flood as having lately exposed the graves but did not make it clear whether flood had already covered them. It appears that at this time, the graves were built on the blackish soil, subsequently submerged in the orange-brown flood deposit and more recently have been re-exposed, and at the same time largely destroyed by flood action and the erosive action of the rains.

The whole area of the graves sloped slightly away from the bank of the river. At the western extreme there are several graves still covered by the deposit and these appear as simple mounds, but the great majority are exposed, or partly so, and provide visible evidence of the whole process. (Pl 35a).

The graves themselves appear to be all cairns of pebbles and stones ranging from the smallest of about 5' diameter to the most numerous class of oval or roughly rectangular shapes and about 7'-9' x 18'. The stones are usually not more than 6"-8" in size and no attempt seems to have been made to define an outer circle in larger stones. In general, I believe, a space of about 4'-6' size was made in the centre and outlined with stones roughly rectangular to oval or horseshoe in shape. A typical form, from a grave that had been almost completely stripped is shown (Pl 28, 2).

Here an oval shape is extended by a tiny cist of slightly larger stones at the N.W. end. In no case, however, is there any trace of a true cist. Many of the graves appear to have been opened by human agency, and potsherds are to be seen scattering the central filling (which seems to have been of a sandy soil covered by the stones of the cairn). The pottery was all in a much weathered state, but sufficient was available to reinforce the interest that Foote's report aroused. Thus several rims of tall strait-sided bowls in red-and-black slipped ware, although none actually with painting surviving, were found. These confirm Foote's report and Subba Rao's opinion of the Hampāsāgar site, that it conforms to the pre-medieval period of the present survey. Several further rims occur that resemble rims assignable to this period from other sites, and from Chandravalli (Pl. 66). A number of coarse and heavy sherds with traces of red slip survive that strongly suggest the type of Foote's elephant-footed urn. These included several heavy knobs, or possible feet, some bulbous parts of the bodies of urns, and the head of a buffalo in the same ware; (it is interesting to note that this head, which must have been luted on to its original place had one of its horns broken before the application of the red slip). (Pl. 356). Other finds included some thin and tiny saucer forms, perhaps parts of lamps, and one such with a pinched groove in the centre, possibly a lid.

Several sherds of medieval D ware were picked up on

the river bank.

Site No. 78. Near the 35 miles 6 furlong stone on the main Lingsugūr - Gangāvati Road, about 1 mile N. of Hulihaider. About 11 cairn circle graves were noticed on either side of the road. The largest was a raised platform with traces of an original peripheral stone circle of about 80' diameter. The remainder are all mutilated and little more than the cairns survive, the largest being 20' in diameter. There is every indication that the larger stones from the circles have been removed and broken by road makers.

Site No. 79. Near the 37 miles 6 furlong stone on the same road as No. 78, and about a mile south of Hulihaider to the E. of the road are about 4 cairn circle graves similar in detail to the other site.

Site No. 84. Krishna Bridge. The site is about 2 furlongs south of the river on the top of a little rocky outcrop which has been extensively quarried. It lies some 300 yards to the west of the main road from Raichur to Mahbubnagar. To the S.E. of the hillock are the remains of a fairly large alignment, of which many of the great standing stones have now been shattered. One remains of over 6' height and near square plan of about 4'. It is impossible to be certain of the original number of stones,

but there is one row of 5 stones still standing oriented 5° east of north (Pl.—). To the north of the hillock there are scattered remains of graves; 6 were found in a wide area. All were cairn circles, the largest with a diameter of 35', whilst others were between 20' and 25'. No trace of cist was visible, although one of the circles was composed of large slabs of granite, placed on end and standing to a height of about 2' 6". The same grave had been partly cleared at some time and traces of red-and-black (Bl) ware sherds were found.

The rocky hillock was covered with a mass of small pebbles, the raw materials for the manufacture of microlithic implements. Among a selection chosen, banded agate was most common, followed by smaller numbers of chert, jasper, chalcedony, quartz and agate. A small collection was made from which it became clear that the site was a factory, for there were microliths in every stage of manufacture, as well as numbers of obvious failures that had been discarded. In addition to the microliths one partly finished dolerite neolith was found. The finished specimens included blades and lunates; there were also considerable numbers of cores.

It may be remarked here that the river gravels contain all the varieties of pebble found, and are the probable source for the raw material. (Pl 106)

Site outside the Raichur District visited in the course of the present survey, and having direct bearing upon problems encountered in the Raichur District.

Site No. 95. Gudabelūr (Godbellur). This site lies north of the Krishna, and about 3 miles from Site No. 84. Krishnamurthy reported in the JHGS IV Pt. 1 a large number of circle grave sites and stone alignments in the area covered by a 10 miles strip north of the river, east of the conluent of the B^hima and within 2 miles of the river bank.¹⁹ It was unfortunately not possible to visit these sites, but a new group was found at Gudabelūr that combine the essential features of others referred to in the Journal.

The site now known as Gudabelūr is that of a medieval temple which is situated near a small rocky outcrop south of the Mahbūbnagar-Raichur Rd. The rocky outcrop on examination revealed traces of ancient terracing with walls of large boulders still visible, as well as numbers of rock shelters. Among the rocks I found several microliths, including a blade and point. To the S.W. of the main rocks there is a small open platform overlooking the river valley and this is strewn with various raw materials for microliths exactly as the factory site at Site 84. About 400 yards N.W. of the temple, there is a small stone alignment of 4 x 4 stones at intervals of 6 x 6 yards. The orientation is 10° east of north. About 800 yards further north-east

and on both sides of the main road there is a group of 6 large platforms with traces of double stone circles around the outer edge. One appeared to have further traces of some sort of structure in its outer perimeter. The largest had a total diameter of 60 yards, whilst the distance between the outer circle and the flat portion of the platform was about 12'.

To the S.W. of the main occupation terraces, and near the microlithic factory site a rock had been engraved with large numbers of parallel strokes, closely resembling those found by Munn at No. 39 (above). It is suggested that these were a form of numerical check, either of crossings of the river, or of the stone working for the medieval temple.

A P P E N D I X I.

Analysis of Grave Types so far noticed in Raichur District and ascribable to the general South Indian (Megalithic) Complex.

<u>Type</u>	<u>Area of District where noted.</u>	<u>Description - Stone Cist Graves.</u>
A.	Benkal Group (BG)	Stone Cist ± Capstone ± porthole ± entrance way ± floor slab on solid rock base.
A1.	BG	Similar to A, but partly or wholly buried in pit ± stone circle.
	Gadval Group (GG)	Single site reported (No. 64 above)
A2.	BG	Degeneration of A, with corner pillars of stone, but without wall slabs. Usually with floor slab
A3.	BG	Elongated cist, rarely with capstone, partly buried and single, double, treble, or even quadruple.
A4.	Maski Group (MG)	Stone cist, walls of multiple slabs, without capstone, with surrounding 1 or 2 stone circles and outer square platform of smaller stones.(S.orientation).

A5. MG. Similar to A4, but with "ash" scatter and \pm large entrance court (S. orientation).

B BG, MG, GG. Stone Circle Graves.
Single, more rarely double, very rarely treble, circles of stone, sometimes roughly squared (GG), \pm pits \pm (?) cists and (?) entrance slabs, \pm small stone cairns. Commonly 18'-25' but more rarely 12'-45' diameter.

B1. BG. MG. Similar to A4 but without cist \pm ash scatter.

B2. GG. MG. Small circles or ovals or up to 8' diameter or 15' length.

C. BG. Simple cairns of small stones.

D. G.G. MG. Platforms of squarish - roundish shape with diameter of 80'-90' and sometimes with traces of single or double stone circles surrounding.

E. MG. Pottery Cists, etc. Terra-cotta sarcophagi and cists at Maski and

legs of legged sarcophagus at
Piklihāl.

F. BG.

Cave graves. Natural caverns
partly walled to form cists.

Relationship of these Types with other Sites outside the
District.

Stone Cist Graves.

Type A. The closest relatives of the graves of this type, built upon the bare rock, seem to be those of Anjanad in Travancore.²⁰ They are more obviously akin to the great field at Rajan Kallur and the other sites in the Shorapur Taluka of Gulbarga District first noticed by Meadows Taylor.²¹ Mahadevan adds three new sites from the same area.²² The most important of these has since been conserved by the H.A.D.²³ and excellent photographs published. The type is further represented at numbers of intermediate sites including Kosigi in Bellary,²⁴ and sites in Mysore.²⁵ The graves cited above are generally made of thin slabs of gneissic rock, trimmed in some cases with a hammer. Similar graves are in some instances reported of quartzite sandstone²⁶ at Konnur, 5 miles N.W. of Gokak, and in Gulbarga.²⁷

Type A1. This type is structurally often identical with Type A, but built in a pit - usually only partly below ground - with the capstone often visible. The type occurs at many sites together with A but there is also a much wider range of sites that can be included in the series. The porthole is not a regular distinguishing feature of either of these types, nor can the floor slab, entrance-way, orientation, etc., be described as its constant accessories. The stone circle often accompanies as a surface indication. A peculiar feature shared by Site No. 6 and the Brahmagiri graves excavated by Wheeler²⁸. is the occasional use of "dry-stone" walling to surround the cist. This feature occurs as a special development in the graves of the Pulney Hills.²⁹ The sites at which this type is reported range from Malabar,³⁰ Coimbatore,³¹ Mysore and Bellary to Gulbarga District.³² It is also reported further east in Chingleput³³ and the lower reaches of the Kistna River at Amarāvati,³⁴ A special sub-type seems to be the group of graves lying east of Hyderabad and excavated at Raigir³⁵ and Maul Ali.³⁶ In these graves the cist is deeply buried below the ground. This local type shares common features with A3 below.

Type A2. This peculiar degeneration of the cist, in which the grave-and-quarry-site are identical has been noticed outside the district at one site, Savandruga, in Mysore.³⁷ The same author mentions its occurrence, in both cases

alongside A1 graves at Chikkjala near Bangalore.

Type A3. The Elongated or Coffin Cist is structurally closely akin to excavated examples from Jivarji³⁸, where it occurs in a pit with entrance passage and cairn circle. In these cases the gabled headstones form a definite link with the East Hyderabad group. A cist with gabled headstone is illustrated by Krishnaswami³⁹, from Pudukkotai. The exact type of those from Benkal appears to be intended by Meadows Taylor in his sketch of Rajan Kallur⁴⁰, where it accompanies type A graves. It occurred again at Jivarji in exactly the same form as at Benkal, but projecting from the top of cairns in the middle of stone circles. Taylor describes them as "long stone chests... none have lids. Possibly the graves of the poorer members of the tribe".⁴¹ In an otherwise unique grave at Gajjalukunda, Kumool Dt., cists of similar dimension occur as coffin shaped compartments within a larger cist.⁴²

Type A4. & A5. The cists of this type are distinguished by the greater thickness of the slabs, and their comparatively smaller breadth. It seems probable that this feature may partly result from the quality of rock employed. The type is peculiar to the west of the district, where it occurs often in conjunction with circle and surrounding square platforms, and with "ash" scatter - sometimes of Kankar sometimes of genuine "ash" from a mound. (A5). In

In one case the surrounding circle was composed of red syenite stone, foreign to the site. The only other graves of this type reported are from Gulbarga district.

Mahadevan⁴³ notes such ash circles at Rajan Kollur, and between Kupi and Dimanhal. At the latter there were about 20 such graves. In both these cases the cists and circles were of sandstone. The orientation in all cases of this comparatively local type of grave in Raichur was southerly. The grave is clearly related to type B1. In two cases at Piklihāl graves of A5 type had large entrance forecourts also with southerly orientation. In no case in Raichur District was any trace of a capstone noted on this type of grave.

Cairn Circle Graves.

Type B. The Single or Double Circle with diameter between 12' and 45' is by far the most common surface indication of graves in Raichur. It alone occurs besides almost every other type noted. Surface observation alone cannot reveal the contents of the grave, but careful comparison of evidence from excavations suggests that these graves have in all cases a pit; certain then have an underground cist of A1 or A3 type; whilst certain have interments and funeral goods deposited in the bare pit. The affinities of the first sort have been discussed above. The second sort, which in at least some cases, seems to have

had an entrance passage, has been noticed by Wheeler at Brahmagiri,⁴⁴ and by Meadows Taylor at Jivarji.⁴⁵ It is unfortunately not possible to extend the range of this type of pit circle as distinct from the cist-circle, as excavational evidence is wanting. In Raichur District previously excavated graves at Sites 41 and 55 suggested it, but outside, evidence is still awaited. It is interesting to notice that Rivett-Carnae reported the graves at Junapani in Nagpur District as pits beneath circles averaging 30' - 40' in diameter.⁴⁶

Cairn circles of indeterminate nature are among the most widely scattered type of grave yet noted.. In Hyderabad state alone, hundreds of sites occur and at several, hundreds, or even over a thousand graves of this type have been reported. (Many cairn circles have been reported in Bellary District, Mysore and Coorg). Krishnaswami reported cairn circles in Chingleput and Pudukkottai, but considered them as containing either a single urn, multiple urns, or T/C sarcophagus, and perhaps these should rather be classed under B2 below.⁴⁷

An interesting sub-group are the circles with roughly trimmed slabs or orthostats, sometimes roughly painted. A further characteristic often noticed in association with these is the prominence of a single orthostat among the other stones of the circle. These graves occur almost all in the Gadwal group of sites, and their affinities

seem to be more with the E. Hyderabad sites of Motamurree, Raigir, Bowenpalli, etc., where Hunt photographed similar examples. Other examples in the same area are at Valigunda where the menhirs are on the N. side of the cairn circles.⁴⁸

Type B1., is a rare circle in square platform with no visible cist and sometimes with an "ash" scatter. The size of the platform is between 30' and 40'. This grave is closely related to A4 and occurs often at similar sites. No clear mention of the type occurs outside Raichur District but the present writer observed a group of square stone platforms close to the 22 miles 5 furlongs stone on the Poona-Sholapur Road which appear to conform closely with it. Only further exploration, and the excavation of this site can confirm this possibility of a northerly extension.

Type B2. There are a few cairn circles and circles of irregular or oval form in Raichur which constitute a group notably separated from the main B class. These are always small, 8' being the usual diameter of the circle and 8' x 15' the dimensions of the oval. This little group is, perhaps, urn circles of the sort mentioned above, and reported widely in the Tamil Plain and Malabar. Only excavation of examples in Raichur can determine their exact nature. The very rough ovals appear closely related to the rough stone circles and ovals of the Nilgiris, and perhaps these are the only truly comparable graves so far reported.⁴⁹

Type C. A small number of simple cairns occur.

Type D. Squarish-Roundish platforms. These platforms occur only at three sites in Raichur (Nos. 74, 80 and 79). They are distinguished from the cairn circles Type B not only by their size, but by the regularly flattened area, inside the sloping sides. The size of this area is about 60' across and the outer diameter of the sides is about 90' in all cases. Outside Raichur District the present writer noticed a group of 6 of these platforms at Gudabelūr (described above, p. 246f) the largest having a central platform of about 150 across and a total diameter of 180'. Around some of these platforms, traces of a double circle of lengthy stones could be discerned. Also probably to this type should be assigned the great rectangular monuments described by Meadows Taylor at Mundivali, Shorapur District.⁵⁰ This group of three such platforms with an outer measurement of 130'-180' presented a very remarkable appearance although Meadows Taylor could not examine or excavate them. In these instances the stones used ~~here~~ were "basaltic trap". Another large platform which probably conforms to the type is mentioned by Mahadevan⁵¹ among the cairn circles on the Jamalpur-Gadalman track of Gulbarga District. The excavations of one of the well-preserved specimens of this interesting group is eagerly awaited.

A further example occurs in conjunction with a stone alignment and circle graves one mile S.E. of Murardoddi⁵². whilst analysis of the famous 'Shahpur tumulus' reveals that such a platform is one of its components. (Below Ch. VIII, p.482f).

Type E. Pottery Cists.

Raichur District has produced three sorts of pottery cist. First at Maski a curious domed cylinder of fine, red, burnt clay with flat base and a small hole in the top. The height was about 35", the diameter 14"; in the middle of the cylinder a rough square entrance c.11" x 9" gave access to the interior. This was covered with a fitting curved slab of similar material. Also from Maski two smaller bath-shaped coffins, rounded at the ends and about 26" in length and 12" in height, contained collected bones. These coffins were of buff-grey coarse ill-fired ware (see Pl.416). At Piklihāl in the course of excavations a number of legs of ill-fired, coarse, pottery suggested the legs of a terracotta legged sarcophagus of more orthodox form. Fragments of coarse pottery, presumably the body of the cist, were found in the same locality. The classic site for such cists is Perumbair⁵³. Other examples occur at Pallavaram⁵⁴. and in Chinglepur District,⁵⁵ also in N. Arcot⁵⁶. Other legless specimens are known: from Feroke in S. Malabar,⁵⁷ from Kadamalai putur⁵⁸. and from Gajjalumonda, District Kurnool⁵⁹. This latter site also produced a legged specimen and is of peculiar interest

because of the highly developed structure of the stone cist surrounding the sarcophagi. This included a paved entrance passage, compartmentation, and the use of 'post' slabs of squarish section at the outer corners of the cist with infilling wall slabs of thin well-trimmed stone. The pottery finds of the site included several pre-medieval forms which are noticed elsewhere. The extension of this type towards Raichur is further attested by the finding of six "elephantine feet" of terracotta in a stone cist excavated by Krishna at Chandravalli.⁶⁰ In close proximity to the cist Krishna reported a find of a silver Roman coin and one lead Sātavāhana coin. One further example may be noted at Sutukeni in Pondicherry. The two sarcophagi each which/had three rows of five legs, were decorated by a raised fillet of thumb impressed earthenware running around the sides, and joining two circles on each side. They were enclosed in a stone cist with W. porthole and floor slab, beneath which was discovered a small pot containing gold and silver ear pendants.⁶¹

A peculiar variant of the legged sarcophagus had the form of an animal. One specimen from Pallavaram⁶² appears to have a domed lid and crudely modelled head and trunk of an elephant. A specimen from Cochin has been described as "cow-like"⁶³. whilst from Sankavaram in Badvel taluq of Cuddapah District is reported a sarcophagus with six legs and a ram's head fitted into a circular opening in the neck. The total length was only 2'7". The edge of the

body is decorated with finger tip impressions. The contents included collected bones and an iron spearhead. Around the outside of the cist (as at Maski) were arranged vessels of black, brown and red wares.⁶⁴ These seem to bear much the same relationship to the simple sarcophagus as the unique Hampā Sāgar footed urns (with elephant and buffalo forms) bear to the four legged pottery cists.

SITING OF POST -NEOLITHIC GRAVES IN RAICHUR DISTRICT

Analyses of 56 grave sites in Raichur from several view-points throws considerable light on them.

I. Relation to Settlements:

1. Closely related to known settlements 8 sites.
2. " " " probable " (not yet identified) 8 " .
3. " " " microlithic factory ... 1 site .
4. Not yet " " any known settlement ..39 sites.

IA. Grouping in certain regions, and in relation to major settlements.

1. Within 5 miles radius of Pihāl 3 sites.
2. " " " " " Maski 3 " .
3. " " " " " Billamrayan gudda 4 " .
4. " " " " " Gadwal 7 " .
5. Benkal Forest area.10 " .

II. Topographical.

1. On hill-tops or hillocks 6 " .
2. In forest or stony-waste ground.....10 " .

(These figures relate to 33 sites visited by the writer)

III. Close Relation to Old or Modern irrigation Works.

1. Near old or modern systems..... 12 Sites.

2. With tanks or wells on site..... 3 " .

(These figures relate to 33 sites visited by the writer)

IV. No. of Sites within 3 miles of Krishna or
Tungabhadra rivers. 26.

No. of Sites within 5 miles of Krishna or
Tungabhadra rivers. 37.

CHAPTER III: NOTES AND REFERENCES

1. Foote, R.B. C.P.A. 1901. Preface.
Munn, L. J.H.G.S. II Pt. 1. pp.132-4.
2. Hunt, E.H. J.R.A.I. 1921. p.140 ff.
3. Munn, L. J.H.G.S. II Pt. 1. p.130.
4. Quoted by Meadows Taylor, J.B.B.R.A.S. IV. p.407.
5. J.H.G.S. II Pt.1. p.130.
6. Newbold, T.J. J.R.A.S. XIII p.94.
7. J.H.G.S. II Pt.1.
8. Gordon, D.H. The Cultures of Maski and Madhapur.
J.R.A.S.B. IX, 1943. p.83 ff.
9. Seshadri, loc. cit. p.90.
10. Subba Rao, loc. cit. 1948 Pl. XIX.
11. H.A.S. 12 p.3.
12. Sankalia, H.D. J.B.B.R.A.S. XXVII Pt. 1. Pl.VII (a)
13. A.R.H.A.D. 1935-6 p.33.
14. Beazeley, G.A. Antiquity 46. Jan 1938.
15. AI, 4.
16. H.A.S. 5.
17. Sankalia and Dikshit, loc. cit. 1952 pp.115-7 and Pl. XXXVI.
18. Foot, I.P.P.A. Pl.62.
19. Krishnamurthy, L.S. J.H.G.S.IV Pt.1. pp.85-9.
20. Iyer, L.A. Krishna. Kerala Past and Present Vol.I,
1948. p.14.
21. ibid p.24 etc.
22. Mahadevan, C. J.H.G.S. IV Pt.1. p.160.

23. A.R.H.A.D., 1940-1. pp.12-13.
24. Taylor, M. loc. cit. 1941. pp.55e7.
25. Branfill, R.B. Ind. Ant. X, 1881. pp.1-12.
26. Campbell J.R. Belgaum Dist. Gazetteer, 1884, pp.582-4.
27. Mahadevan, C. A Note on the Archaeological Finds, p.12
28. A.I.4.
29. M.A.S.I. 36. The Dolmens of the Pulney Hills by Anglade, A and Newton, L.V., and Hosten H. Dolmens et Cromlechs dans les Palnis, Brussels, 1905.
30. Iyer, L.A.K. loc. cit. 1948.
31. For an example from Sultur see Man, 1930. No. 134, p. 171-2.
32. At Jiwarji see Taylor, M. loc. cit. 1941, Pl. IX, Cairn A.
33. Krishnaswami, D. A.I. 5. Type K.T.-a etc.
34. Based on writer's own observations.
35. Hunt, E.H. loc. cit. 1924.
36. A.R.H.A.D. 1915-16, pp.610.
37. Branfill R.B. Ind. Ant. X. Pl. Type 1.
38. Taylor, M. loc. cit. 1941 Pls. XI and II, Cairns E & D.
39. A.I. 5. Pl. XIV B.
40. Taylor, M. loc. cit. 1941 Sketch II, p.91.
41. ibid p.9.
42. A.R.A.D.M. 1914-15 pp.39-41.
43. Mahadevan, C. A Note on the Archaeological Finds, pp. 12-13.
44. A.I. 4. p.187 ff.
45. Taylor, M. loc. cit. 1941. pp.13-15.

46. Rivett Carnac, J.H. J.A.S.B. XLVIII, 1879 pp.1-16.
47. A.I. 5. p .37.
48. A.R.H.A.D., 1940-1 pp.3-4.
49. Breeks, J.W. An Account of the Primitive Tribes and the Monuments of the Nilghiries, 1873 Ch. VI.
50. Taylor, M. loc. cit. 1941 pp.111-2.
51. Mahadevan, C. loc. cit. p.11.
52. J.H.G.S. IV Pt. 1. p.86.
53. A.S.A.R.(S.C.) 1907-8 Photos 1722-3.
54. " 1906-7 " 1479.
55. Krishnaswami, loc. cit. p.37.
56. At Panduvaram Deval. See Newbold, T.J. J.R.A.S.XIII 1852, pp.90-5.
57. Aiyappan, A. P.I.S.C. 1933.
58. A.S.A.R.(S.C.) 1905-6 Photo 1148
59. " 1914-15.
60. A.R.M.A.D. 1929 p.16.
61. Information from Casal, formerly of the French Delegation in Pondicherry, who did the excavations in 1950.
62. A.S.A.R.(S.C.) 1906-7 Photo 1484.
63. Aiyappan, A. P.I.S.C. 1945 p.39.
64. ibid p.41.

C H A P T E R I V .

EXPLORATION A N D E X C A V A T I O N A T S I T E N O . 9 1 . P I K L I H Â L

(P A K L I H Â L) N E A R M U D G A L .

CHAPTER IV.

EXPLORATION AND EXCAVATION AT SITE NO. 91. PIKLIHĀL (PAKLIHĀL) NEAR MUDGAL.

General.

The town of Mudgal, dominated by its fort, forms one of the most renowned spots in the district. The history of Mudgal fort goes back to pre-Muslim times, and this lead me to seek a prehistoric settlement. Munn reported two groups of circle graves to the north of the town, and there seemed reason to expect remains near the fort itself. A brief survey of the area, however, did not support this hope. But a reconnaissance of the rocky ground lying south of the fort disclosed a circle grave near the 13 miles 6 furlongs stone, to the west of the road from Lingsugūr. It now appeared that the isolated group of hillocks about $\frac{1}{2}$ mile further west was a most likely position for a settlement, and subsequent exploration showed it to be one of the richest neolithic settlements in the district, with evidence of later occupation and of a small medieval fortified settlement.

There can now be little doubt that this site is the Modogoulla of Ptolemy, reported with Banavāsi and other towns of Ariake.¹ The hypothesis is quite consistent with dating of the Pre-Medieval A period given in Chapter XI.

We shall report first the explorations at Piklihāl, next the rock-paintings and -bruising around the site and finally the excavations carried out in June 1952.

1. Explorations. All the descriptive letters used refer to the plan of the area given in Pl. 45. The various sites will be classified roughly in chronological periods, although precise evidence is often wanting.

Medieval.

There is no reason to suppose that there was extensive settlement in the area after the foundation of the fort at Mudgal. The indications at Mudgal are that the town grew up with the fort. The exact historical significance of the fortified village, area 'C', is not yet known, and demands further excavation. This could establish whether the settlement was a continuation of the pre-medieval village or not.

Area C. There is a series of stone-built house-foundations. They lie on a little saddle sheltered from north and south by stony hillocks and divided further by a spine of rocks running E/W though the centre. The house foundations are reminiscent of those at Maski, near the saddle S.E. of the Malikārjuna temple, and at Billamrayan gudda. Several of the houses, particularly in the N.W. corner (which is surrounded on three sides by natural rocky walls), were built in front of natural cavers. The S.W. entrance passes through a sturdy outer wall now ruined and there are traces of such a wall to the east of the area. The area yielded numbers of sherds of the grey medieval ware, and seems undoubtedly to have been a small fortified village.

Wall and gate foundations N.W. of Area A. For some hundreds of yards N.W. of the main group of hillocks there are traces of what appears to have been a stone wall, of considerable strength, and faced with very large roughly trimmed stones inside and out. At one point there are the foundations of a considerable bastioned gateway with probable guard-rooms. About 100 yards S.W. of this gateway there is a stone platform with a typical Hanumān image of Medieval date. These remains clearly relate to the old approach to Mudgal from the south rather than to the Piklihāl site. This hypothesis is fortified by the cart track from Mudgal to Wyakarnhāl which passes close to the wall.

Area J. associated temple, caves and tank. On the hill-top marked 'J' there are a series of plateaux and terraces with traces of stone walling and house remains. They are less clearly defined than those of area C. The area produced very few sherds, but some were of the medieval grey (D) wares. The description is continued under Pre-Medieval. To the north there is a group of rocks capping the adjoining hillock with a series of large caves. In one of these there is an almost circular rock cut well about 10' diameter and apparently 4' - 5' in depth. This adjoins a small temple with a medieval Bhairava image, and several other caves bear traces of modern occupation, probably by sadhus. Immediately north of these rocks is a surface drainage tank with stone bund.

Field terraces. Around the northern and eastern

side of the main site there are several long stone terrace walls, now partly broken down, but originally conserving great areas of soil, and making several fields. These are clearly not modern, although small scale terracing of the sort is still continued, and during the rainy season considerable activity was noticed in the rocky waste north of the site.

Pre-Medieval.

The terraced areas A,B,C, produced numbers of sherds of red-and-black painted (B2) ware, and of red slipped (B3) ware. Intrusive wares included a sherd of red polished (C3) ware, the neck of a 'sprinkler' found in area A, whilst area E and east of B and C produced numbers of sherds of fine black and red painted ware with bold wheel and even human and animal designs. It seems that all these areas were occupied in this period, although the frequency of B2 painted wares suggests that the eastern part was the site of a compact settlement. Two other terraced areas seem to indicate some extension of the site in this time. These are K and J. (Pl. 45).

Area K. A rain gully to the east of the hill cuts through considerable deposits of pottery including red-and-black (B1) and some B2 painted sherds. They probably originated around the foot of the hill to the west of K where there are the vestiges of a small number of terraces and made grounds, now practically washed away. To the east

of K along the foot of the hill are similar deposits. Proceeding north in the valley to the east of J, on the western slopes a broad 'ascent' or ramp is to be seen on the rocky face. This was made by taking advantage of the natural cleavage to form rough steps at steep places, whilst at others hollows appear to have been filled with smaller stones. A somewhat similar feature was noticed at Kopbal. The probable purpose was to provide a way for cattle and other quadrupeds. At the top of this slope is Area J. These terraces and made grounds were grass covered when visited, and yielded very few remains of occupation, but there were found, besides the medieval sherds already mentioned, sherds of B1 ware and B2 painted ware. There are several small natural caves in the rocky walls of the plateau, and sherds were found on a stone built platform in front of one of these. The most striking cave is partly natural but partly artificial, being hewn out of a clean rock face on the N.W. of the plateau. The cave is about 14' wide, 10' high and 24' long, with a roughly apsidal inner end, and an arch-formed roof. There are no traces of chisel marks on the rocks, which are, of course, gneissic. Before the cave is a terrace of 16' width with a stone retaining wall of about 4' in height. From this terrace a stone stairway, in part natural, but further partly cut or built-up, slants up the cliff (which is here about 20') to a flat made ground and a group of great rocks forming several natural caverns, and a little, airy, solitude

calling to mind the Palki-gundu rocks at Kopbal. Here, as in the cave below, I found no trace of any inscription. On the rocks to the west of the site are numbers of rock bruising of bulls. They appear to be modern, and are of a regular, stylised type.

It is perhaps right to associate with this period, although without excavation it is impossible to be definite, a number of large iron slag heaps. These are marked on Pl. 45 with a '●'. It may be noticed that the slag heaps which without doubt mark a metal working factory, are in each case located near the foot of rocky slopes, and in most ~~cases~~ near caves or shallow caverns. Iron slag is among the most common finds at ancient sites of whatever age throughout the district, but ~~that~~ the quantities here noticed are greater than any others seen by the present writer.

Post-Neolithic.

The areas A, B, and C contain many remains that suggest an occupation in post-neolithic times (Pl. 47a). The quantities of red-and-black Bl ware pottery, including forms recognizable from graves at Brahmagiri and elsewhere, and the large numbers of microlithic artifacts extend over all the terraces of these areas, and down towards H and E. It is possible that the areas K and J may have been first settled at this date. The greatest number of monuments are, however, the graves and alignments that surround the settlement area. They will be dealt with in groups, as

marked on the plan. (Pl. 45).

GI. This little group of graves is near the Lingsugūr-Gangāvati Road; there are traces of four graves scattered over several hundred yards. That nearest the road has a modern shrine on it. It consists of an outer circle (tending towards square) of about 40' diameter, with an inner circle of stones 32' diameter. The modern shrine is at the west^{end} of this circle; there is a small cairn of stones in the N.E. quadrant. The remaining 3 graves are cairn circles of 20'-25' diameter.

GII. (Pl. 48) There are remains of 8 definite and 2 possible graves. The largest is a square cist of 8' length composed of some 3 or 4 thick slabs on each side. There is no capstone, but a southern entrance, 4' in width. Outside is a circle of fragments of "ash", apparently identical to that from the ash mounds. Outside the ash is a circle of rectangular boulders, with their long axes around the circumference, and of 6"-9" in thickness (about the same as the slabs of the cist). (Pl. 47b). This outer circle has a southern entrance which leads into an elaborate entrance court, 21' x 31' composed of a double line of stones, with a further southern entrance. About 15 yards in front of this grave stands a single mehirⁿ of some 4' in height (Pl. 47b). All the stones of this and the other graves are of grey gneiss. A line of slightly smaller stones runs westwards from the junction of the grave and

entrance court, forming a partial enclosure for 5 more circles (Pl. 48). Of these one has an "ash" circle, one a small oval subdivision, another is only 8'6" in diameter, whilst the remainder are of 20'-25' diameter. In the N.W. corner the enclosure wall makes a sudden detour around a fallen menhir of about 4' in length. To the south of these graves are two more: one, roughly resembling the first, is a near-square, with 10' cist but no visible trace of "ash" circle. The other is a single circle of 27' diameter. Close by the N.W. corner of the main group are traces of two probable graves, the clearer being part of a double square of stones, 22' along the outer side, with an inner scatter of small lumps of "ash". The remaining stones suggest that the other was a near circle, of two lines of stones.

GIII. (Pl. 45). Further west, and in close association with two alignments (FI and II), below the slopes of the western extent of the hillocks, more than 20 graves survive on cultivated ground. It is possible that there were originally more. The majority are simple single or double circles, 16'-25' in diameter tending in some cases towards squares. One, built in close contact with the alignment FI, is noteworthy. It (Pl. 49) consists of an outer circle elongated to form a near-horse-shoe partly closed at the south and measuring about 19 yards x 23 yards. Inside is an 18' diameter circle with traces of an inner circle and cairn of about 10', possibly concealing a crude

cist of the type described in GII. Another grave about 55 yards further west had an inner circle with small oval cairn in the east quadrant, reminiscent of examples from GI and GII (Pl. 49).

GIV. Along the foot of the northern slopes of the hillocks there are several more isolated circle graves, scattered at wide intervals.

There are four rectangular stone enclosures, situated to the S.E. of the area 'H', to the N.E. of GIV and two to the east of FIII. The second is 36' x 28', with entrances on the E/W or long axis. The stones, some of which had fallen, originally stood to a height of several feet. The first structure was somewhat larger, with an approximately similar axis and rather smaller stones. The third two lie close to the little valley running north from the east of FIII, and are of about the same size as the second. There is no trace of any remains in the centre of any one. They seem to be related to those found by Subba Rao at the foot of North Hill, Bellary.^{1a.}

FI.Alignment to the N.E. of GIII. The stones when in position stand to a height of about 6'. Several have been fractured, and heaps of fragments mark their original position. All are of gneiss, and seem to have been roughly trimmed, often to make a squarish section. Some have fallen or are no longer in their original places, although one line of no less than seven still stand and in

all about 20 are in place. A compass reading on aligned stones indicated that the orientation was about 20° west of north. The graves of GIII are scattered around the area and were probably constructed after the alignment.

FII. Several hundred yards west of FI and beyond the grave area is another group of standing and fallen stones, mostly smaller than those of the former alignment. It was, however, impossible to ascertain the original number of stones or their orientation.

FIII. Almost due north of area 'D' is a small isolated hillock to the north of which is a little enclosed valley. This contains about twenty menhirs of roughly squarish section and of up to 7' in length; all except one have fallen. The orientation of the fallen stones suggests that it was originally very near that of the FI. The two rectangular enclosures mentioned above are about 200' east of the alignment.

Neolithic.

The areas A, B, C, and E and other places at the foot of the group of hillocks bear traces of terracing and there are several caves and rock shelters in the area. Not one of the caves appeared to have any original deposit remaining, a fact that may be attributed to the nature of the rock formations and to the subsequent weathering and erosion of the cave floors. The areas mentioned above produced numbers of microlithic artifacts, neolithic stone

axes and flakes of dolerite, quantities of A ware pottery and numbers of saddle querns, rubbing-stones and balls of gneiss, diorite and schist. These things suggested neolithic occupation.

2. Rock Paintings and Rock Bruisings. In the course of explorations many rock paintings and bruising were discovered around the main site. Evidence of an inscription suggests that at least one painting, and probably a group of closely associated paintings and bruising are of very recent date, whilst it appears possible to divide the remaining examples into a number of sequential stages. Both / techniques occur most frequently in the rocky hillocks around the main site, and in the hillocks to the north, from J in the west to a spot about two furlongs east of the main road (Pl.45). I deduce from this distribution that the paintings and bruising may be directly associated with the occupation of the settlement or some part of it. In this light, circumstantial evidence can be adduced to demonstrate that the earliest examples in Raichur district relate to the Neolithic period. The proposed sequence is based upon style, technique, the contents of the paintings, comparison with terracottas discovered in the excavations, inscriptions and immediate proximity to roughly datable monuments.

1. Modern-medieval. A number of bruising, paintings, engravings and scratchings are of recent date. On the rocks near a farm house just east of the 13 miles 2 furlong stone is an umbrella of European pattern, and nearby a bull in

angular outline. Further east is a small engraving of a mosque-like building, near a large cave that seems to have been occupied in very recent times. Between J and K at the foot of the hill is a field boundary stone with the outline of a bull and inscription in modern Kanarese script, painted in a white lime-wash, whilst on the rocks to the north of J there are large numbers of crudely bruised and scratched bulls closely resembling the painted one, and all near to the S'aiva shrine noted above. Characteristic of the style of these examples is the angularity and stiffness of the outlines (Pl. 110a, left). There are one or two engravings of religious motifs. To the west of the farmhouse, west of the 13 miles 2 furlongs stone a nāga, cakra and shank are engraved on a large rock. A Viṣṇu-pada was found near the scratched outline of a temple, on the southern side of the rocks south of C. Another temple-like building is scratched on rocks to the east of the main road. A local agriculturalist was requested to make a bruised design of a bullock and produced in outline something that showed clearly the influence of western perspective and the Congress Party election symbol (1952). On stylistic grounds no painting in red ochre can be attributed to this group.

2. Medieval-Pre-medieval. To this group seem to belong a number of scenes in dark red ochre, many occurring to the south of C, on the northern faces of the rocks. Here is a large group representing horse-riders and an elephant. The riders hold swords and axes. The general

style closely resembles the 'hunting' group from the Benkal forest (Pl. 114) and is characterised by the small scale of the actual figures and by the obvious weapons carried. The figures are in both outline and silhouette, the latter predominating. To this period also may belong the small line of pin-men with linked hands, in whitish pigment from the rocks in the centre of C, as well as the crude outline bruising of a small man with sword from the same site. Codrington has suggested that the "pin men" and lines of dancers may be associated with gopis and representations of the rās līlā.

3. It is impossible to fix chronological periods for the remaining mass of engravings and paintings. They may be dated pre-medieval to neolithic.

a) On the same rocks in the centre of C, and on overhanging rocks at L (N.W. of the cart track) are a number of bulls of red and dark red ochre, painted in silhouette. The forms are forceful, whilst there is considerable grace in the great curved horns, represented in several instances with bows (?) at the ends (Pl. 109).

An interesting hypothesis springs to mind in attempting to account for these bows. Crooke² has drawn attention to the widespread existence of bull baiting in India, and among the customs he describes the Jallikattu or 'tying of ornaments' of the Maravans of Madura and the Kallas of Madura and Tinevelly provides a possible explanation of these 'bows'. A cloth or ornament is tied to the horns of

a bull and young men compete to remove it. Success is a mark of prowess and strength. It has been suggested that the custom may be invoked by Ayar girls in the selection of a husband.³ Crooke also notes the bullock races of the Bants of Kanara, and the continued popularity of this practice in Raichur is widely reported.

On an overhanging rock at the summit of the little hillock P is a line of deer and of (?) buffaloes, also drawn in red ochre outline with a similarly lively style. All these examples are on sheltered rock surfaces that are still grey, whilst the normal weathering of the surrounding rocks is dark brown. It thus seems clear that these sites were chosen for their sheltered nature, and that the surfaces are comparatively recently formed.

b) Closely allied to the above group are the paintings of three secluded caverns R, M, and N, all of which are well removed from the main settlement area and closed in by rocky hillocks. These sites have paintings of red ochre on the protected rock surfaces in the caverns. The subject matter consists of groups of signs and symbols. Cave R includes a makar, a small dancing figure, bull and a tree. N includes crosses, taurines, a makar, snake, ? an elephant, circles, a five pointed star, and other unrecognizable signs (Pl. III b). There is quite a deep cave behind the shelter where these signs occur, and a modern shrine of Huligamma lies a few yards away. The animals, when clear, are usually in silhouette and

of small size.

c) The third is the largest group. It consists of a very large number of rock bruised figures of several main types, for the most part around and above the habitation areas A, B, and C, but also from similar rocks near the road at the 13.1 mile stone. Nearly all these bruising are on weathered surfaces, and are themselves often considerably weathered. We shall notice only the general characteristics.

Human figures. On the rocks S.W. of A3 there are in several spots groups of figures. Pl. 110b is a photograph of one such group. On the left is a lanky figure with a staff in the left hand. The body and legs are shown in silhouette, in contrast to the outline figure to the right which appears to be a more recent example. The treatment of the legs is typical with the long ballooning of the thighs. The figure with staff recurs several times in this area and another larger figure treated in a similar manner occurs nearby. The second group of human figures appears on a high platform at Q (Pl. 110a). These are close to a modern bull and European style of umbrella, both of which are scratched in angular outline on the rock and probably relate to quarrying activities nearby. The human figures which have perhaps been touched up, constitute a central figure with out-turned feet and raised bent arms, flanked by two other figures in similar position, and one lower figure to the left with arms lowered. The trunk and legs have been shown by a similar formula to that noticed above.

One other figure of this type was noticed on the rocks in the centre of C below the little outline figure noticed above. All appear to be males.

Animals. By far the most numerous group of bruising is of animals. These are to be seen high up on the rocks above the whole area particularly at A, B and C; the humped bull is most common. It occurs singly and in groups, overlooking caves, settlement areas, and the surrounding plain. Pl.109b shows a fine and typical example from Maski, apparently with a third horn.⁴ In one case, two bulls stand opposed to each other, possibly a fighting scene. Some of the animals are represented only in outline, (Pl.112a) whilst a smaller number is shown in silhouette. The general style is less graceful than the paintings mentioned above. The horns are shown often as being of considerable size, whilst in numbers of instances the head is diminutive, and the hump in some examples tends to stand as a triangle between neck and back. In some cases four legs are shown, in others, however, the legs are shown as single pairs, as beside the cave N.W. of D. Other good specimens occur west of A1, east of 'E', west of B1, and S.W. of 'A'. Other animals shown are sambhar deer, reminiscent of the examples found by Munn at Billamrayangudda, and represented by two large groups, S.W. of A3 and to the east of A3. The long horned buffalo occurs in several places, notably in the group S.W. of A3, and at P. What may well be antelope are delicately represented in outline east of A3.

Other Bruisings. On the rocks S.E. of 'E' is a group of 14 curious hour-glass shaped objects, in two rows of seven. They are much weathered and the outlines indistinct. Two objects that are possibly similar are to be seen in the upper part of Pl. 110b.

The dating of these paintings and bruising cannot as yet be undertaken with any certainty. They are remarkably and distinct in style from the Medieval examples, /the advanced state of weathering indicates that at least one large group is considerably older than the certainly recent examples. Thus whilst it is quite possible that the groups 3 a) and b) are later than the main group c), it should also be recalled that they have certain features of technique and style in common with the paintings of 2 (Medieval- Pre-Medieval).

For the remaining bruising which weathering would suggest to be the earliest in time, we may note their association with the cultures revealed by the excavations, and the presence in the Neolithic of terracotta figurines of humped bulls, having a diminutive beak-like head, a hump springing high from the neck, and long prominent horns. Some at least of the bruising distinctly recall the terracotta types. The animals of the chase and the human figures provide no further clue for dating, but they too seem, by a process of exclusion, to belong to the earliest period. The caves with the painted symbols, suggest by their se-

clusion that they were centres of ritual reminiscent of the caves and symbols used by aboriginals of Australia in the initiation of youths.

In this way the distribution of paintings and bruising falls into two distinct groups: those which are in and around the main settlement areas, above made-grounds, saddles and terraces, and beside or above rock shelters or little caves, and (excluding the Medieval examples) around caves or secluded rock shelters at some distance from the settlement. This distribution together with the complete absence of examples from more distant rocky sites, even where there are caves and suitable rocks, seems to reinforce their coincidence with the main periods of occupation suggested by the excavations.

3. Excavations. A. General Aims. Having completed the above explorations in the district and at Piklihāl, it was possible for me to summarise the probable periods of occupation at the site by comparing the data with the sequence of cultures suggested by Wheeler at Brahmagiri. It appeared that there was a rich Neolithic occupation with ample attestation of post-neolithic ('megalithic') occupation. But important new questions arose of which we were only now aware.

The first question was that of the age of the field terracing, or levelling of the slopes and sides of hills. Since Foote's brilliant analysis of the Castellated Hills

of the Deccan, little attention had been paid to general location of sites, and as he put up the "problem of the terraces or 'linchets'"⁵. Subba Rao had been able to confirm the Neolithic occupation of the plateau of Sangana-kallu hill. The present aim was, therefore, to provide excavational evidence to fortify the surface observations and collections at sites throughout the district.

The second question was to extend as far as possible the knowledge of the life and economy of the people of the neolithic culture. For this excavational material could clearly contribute, and particularly a careful collection of all animal bones, analysis of which should be able to show new facts on the basis of the economy.

The third main aim was to throw critical light on the published reports of excavations at Brahmagiri and at Sangana-kallu. Piklihal lies many miles north of either site and thus could extend the information from them by a reasonable step.

Other problems requiring study were the chronological relationship of the cairn circle graves to the stone alignments and the presence of lumps of 'cinder' or 'ash' on some of the cist circle graves. Further it was urgent to find some evidence to support the early dating of at least some of the rock bruising and engravings.

B. At the end of May 1952 I reported the discovery of the site to Dr. P. Sreenivasachar, the Director of

Archaeology, Hyderabad, and he kindly proposed that the Department should make possible a small exploratory excavation under my technical guidance. He further deputed Syed Yusuf, Assistant Director of Archaeology, to assist in the organization and administration of the work. The result of this proposal was the excavation from 5 June 1952 to 8 July 1952. As I had to return to England on the 23 July 1952, the final work of drawing the pottery, photographing the finds and producing an adequate catalogue, together with the vital work of studying the large collection of microliths, both from the excavations and surface and the yet more vital work of identification of the considerable collection of teeth and other bone fragments, particularly those from the neolithic occupation levels, had to be left in the hands of the Department in Hyderabad. The outcome of these various tasks is not yet available and thus the adequate summary of the excavations has not yet been possible (March. 1954). I was, however, permitted to bring home a small collection of sherds representing the various neolithic and post-neolithic wares, and a representative collection of stone artifacts, including a considerable number of microliths. Unfortunately in this latter group the microliths from the excavations were divided, layer by layer, and thus the possibility of statistical utilization of the evidence they provide was considerably narrowed. Nevertheless, the objects brought to England will be of great value in our work in the University.

C. The following cuttings were made:

Site I. A 10' square was excavated as a preliminary sounding in the centre of the level ground B2.

Sites II, III, and IV. These three small excavations were primarily intended to show the possibility of relating the alignment FI with the nearby cist circle graves. A 10' square was excavated to natural moorum around one of the standing stones. It revealed nothing but three small depressions around the stone which evidently related to its erection. The excavation was not, however, without fruits as several sherds of much decayed red and black (B1) ware were found in these depressions in a position that left little doubt that they were contemporary with the erection of the stones. The ware exactly corresponded to fragments discovered in the nearby cist graves.

Site V. A 6' square was excavated in the stone foundations of a small circular building in the N.E. of area C. The excavation produced a considerable quantity of medieval pottery and fragments of glass bangles, but the whole cutting to a depth of 3' proved to be mixed made-ground with no trace of occupation deposit. The cutting was therefore not completed.

Site VI. An 8' square was excavated in the little saddle A3. The whole square produced only wash deposits.

Site VII. A 4' trench was cut from the rock face below a small cave on the east of the saddle A2, and subsequently

extended to the centre of the saddle, and thence at right-angles in a southerly direction to the terrace-wall at the south of A2.

Site VIIIA. A 10' square was cut on the southern side of the saddle E., the square was after enlarged to include the burial discovered.

Site VIIIB. A 4' trench was cut from the rock-face N.W. of E, with a final length of 13'.

Site IX. A small cutting was made from the rock-face S. of A and W. of A3. The cutting revealed bed rock at a depth of 3'9", and no stratified deposits were encountered.

D. Site VII. A plan and sections of this cutting are given in Pls. 50-1. The trench was 4' wide, but it was enlarged wherever this was found to be expedient. The overall length was 102' and thus was designed to provide ground sections, roughly at right angles, of a half of the saddle. The modern field surface is cultivated. Layers 0 and 1 form the humus which was differentiated by a number of small sterile pits - probably the results of agricultural activities. The layers contained a mixed collection of sherds of B1-4 and D1 wares, whilst A1 ware was represented by a number of largely washed and worn specimens. 2 broken dolerite axes, one pecked the other polished, and one disc cylinder circular bead of magnesite were also found. In the D sector 2 similar beads of magnesite and one long cylinder circular of banded agate occurred. Layer 2 was

characterised by a hard yellow stony floor surface in the N. part of the trench. This faded away into a yellowy earth in the S.W. angle, and ended abruptly near the cave entrance. The floor was cut by a number of (?) plough scars and by Pit 3, which contained mixed sherds and bones of animals. Pit 1 was probably dug from the floor and was lined at the bottom with a layer of yellow gravel. It contained an iron sickle and knife blade and a disc of bronze. Also in the filling of the pit, but at a higher level was a crystal bicone hexagonal bead. The level of the floor was not constant, but rose in two small steps of 4"-6" in the N.E. sector. Layer 3 was a brown earth make-up beneath the raised part and produced 1 fragment of iron, two carnelian beads, and two magnesite disc cylinder circular beads. Layer 4 was a similar make-up earth distinguished by quantities of charcoal, and yielding 3 disc cylinder circular magnesite beads. In the S.W. arm of the trench Layer 2 formed a surface for a series of stones laid as if to form the foundation of a fence (Plan, Pl.50). The stones were round granitic boulders, but the outer face of the wall was lined by thin slabs of the same rock. The wall, and the floors seem to have been built against the mass of stones forming terrace wall II. Terrace wall I appears to have been constructed in its final form between Layers 4 and 5.

Layer 5. This was the first layer from which the B2 painted ware was totally absent. It consisted of a

light brown earth, divided from Layer 4 by a trample line, and containing the occupation deposit which lay on the floor below it. The excavation of this layer was not continued beyond the angle of the trench, and no exact counterpart for it was to be found in the D. sector. The pottery included sherds of A1, 2 and 3 ware in about equal quantity with B1 and 3. The rim of a bronze bowl occurred. There were also large quantities of animal bones, shells and fragments of burnt clay associated with an ash scatter which proved to be over a stone hearth. Part of a granite saddle quern (broken), a red terracotta 'horn', a large jasper core rejuvenation flake and three pieces of tortoise shell were other noteworthy finds.

Layer 6. consisted of a thin regular clay floor running from the rock face to the end of the E.W. angle of the trench. It had no exact counterpart in the D. sector but seems to equate with 6 D. The floor had evidently been the site of a hut, for a number of post holes were discovered in the A sector. About 4 yards from these post holes three standing granite posts were discovered forming a triangle, and shown in Pl. 53a. This appears to have been a tripod stand similar to that noticed in Layer 6D, and was adjacent to the ash scatter described above. 4 thin remakings of the floor were excavated in this layer, and revealed a complete saddle quern set in the layer below, and several feet from the hearth (Pl. 53a). Very little pottery was found on the floor: it consisted almost entirely of A ware,

including incised and perforated sherds. There was a very small number of sherds of B1 ware or of the distinctive A5 ware. One knob of grey A2 ware occurred, apparently from a lid. Midway between the rock face and the post holes, a group of small stones marked the covering of a grave dug in this layer. Excavation revealed an extended burial, roughly with head to the north, in a shallow coffin shaped grave (Pl. 54a and b). The body was on the back, the head turned to the right. A round spouted vessel of A2 ware (grey/black) had been placed beside the head, whilst a tall open vase of similar ware lay beside the pelvis. In the D Sector, Layer 6 contained a hearth, built up with a surround of angular boulders, with three chips of granite standing to about 1'3" above the surface, forming a triangle of about 1'6" sides. There was a great accumulation of ash around the stones. A broken polished dolerite axe had evidently fallen into the fire and the fragments were recovered, showing signs of heat fracture. Near the hearth was a saddle quern with rubbing stone still in situ. A few feet from the hearth a pit was excavated containing a large storage jar, hand made and of buff clay, with flared rim and raised finger-tip decoration typical of the A1 ware forms. This pit appears to be contemporary with the hearth.

Layer 7. Two similar clay floors lying directly beneath those described. Finds from these levels included pottery as for layer 6 and also one large unpolished dolerite axe. Numbers of animal tooth and bone fragments and

shells were also found.

Layer 8. was marked by the presence of small lumps of lime on the floor surface and constituted two more floors with further post holes. The finds included several fragments of calcified dung, a pottery 'horn', a perforated sherd, and fragments of mud daub, some burnt, with the marks of woven wattle still visible.

Layer 9 consisted of two similar floors having ash scatters, further calcified animal dung, animal bones and teeth, the point of a polished dolerite axe and one sherd of painted A3 ware.

The layers 6D, 7D and 9D (Pl. 53b) appear to be distinct from the above sequence in that they lie outside the terrace wall II, and partly over it. They consist of soft ash soil, and probably represent accumulations of rubbish. Layer 6D produced a majority of sherds of A wares, with a number of A5 (intermediary between A2 and B1 ware) and was characterised by its dark ashy nature.

Layer 7D was of a much lighter coloured soil and produced a small minority of sherds of B1 and B3 wares, in addition to a polished stone axe.

Layer 9D was of a reddish coloured ashy soil, and contained only one intermediary A5 ware sherd among the predominant wares.

Layer 10. Running across the northern angle of the trench, and under the series of floors, and also lying

under the D sector, was a ^alayer of soft dark red sandy soil of varying depth and reaching throughout down to the granite boulders that were the limit of the excavation. The soil was not visibly differentiated by any changes of colour or density, except for the small intrusive pit of wood ash in the B sector. It contained large quantities of sherds of A1, 2 and 3 wares, including numbers of perforated and incised sherds, and painted A3 wares. Also found were two legged stands of red A3 ware (Pl. 58b) and numbers of horns or legs of similar ware. Of a similar ware were the parts of two terracotta figurines of humped bulls of distinctive form (Pl. 94 Nos. land 2). The layer also produced large numbers of animal bones and teeth, and a number of snail shells. In the B sector, lying upon the granite rock was the extended skeleton of a child of 10-12 years, lying on the right side and head roughly towards the S.E. There were no grave goods (Pl. 55b). Almost immediately over the burial was a small pit of regular form, roughly circular and filled with wood ash. It contained no other remains. The excavation of Terrace-wall II was not completed, but it appears that this wall was built upon the surface of Layer 10. The occurrence of sherds and bones etc, was greatest at the eastern end of the trench. This fact is explained by the stone built platform (10C) which appears to have been constructed before the little cave of shelter in the rocks behind. Excavation of this platform produced a further bull figurine, pottery 'horns',

1 polished dolerite axe, and typical A ware sherds from the interstices of the component rocks. That this stone platform was, in fact, built before the accumulation of layer 10 may be gauged from the section at the northern limit of the platform. Here Layer 10 clearly rose against the platform as did the later clay floors. It is further clear that the level rose until finally Layer 6 had buried the stone platform completely.

E. Site VIII. This site is a small plain ground between rocky hills (Pl. 56). The present soil is very poor and the area is not cultivated. The W. end is banked with a stone terrace wall which slopes away to the surrounding plain, whilst the E. side gives access to the wider saddle of area C. In the S.W. of the area are traces of a line of stones cutting off a small platform, and in this area numbers of sherds of painted B2 ware were found. The VIIIA cutting was designed to provide confirmatory evidence for site VII and before its completion it was realised that the ground adjoining the rocks was more likely to provide actual habitation than the centre of the area. Thus upon its completion a small trench was opened at VIIIB designed to provide comparative evidence to that of VII~~C~~. VIIIC was a small cutting to a depth of 9" attempting to trace other parts of a pottery legged cist (?) of which one leg was found in VIIIA.

1. (Pl. 57) Layers 1 and 2 comprised humus and plain

undifferentiated compact brown soil. They produced a mixed collection of sherds of predominantly B wares with an admixture of D. Near the surface of (1) a roughly burnt clay leg, reminiscent of those found by Krishna at Chandravalli and apparently from a pottery cist ~~or~~ sarcophagus was found. In the area VIIIC three more legs and quantities of coarse sherds, probably of the cist, were recovered.

Layer 3. Beneath a clear horizon, layer 3 was of a darker shade than 2. It contained fragments of iron slag, and predominantly B ware sherds.

Layer 4 was a yellowish earth lying below an equally clear horizon, and containing entirely A ware sherds. There was no trace of an occupation deposit, and it appears that the pottery and other objects found were debris that had accumulated during either the washing down of soil from the slopes around, or the action of cultivation upon such silt. On the surface of this layer was found a copper chisel $6\frac{1}{4}$ " long with rectangular section. There was a number of fine A2 and 3 wares, including a legged stand of similar type to that described above, and 10 incised sherds. This layer contained an extended burial, apparently in a grave dug from the surface of the layer, although very careful excavation failed to reveal the exact extent or depth of the grave (Pl. 58a). The body was face up, the head being to the South. On the right side of the head were five large chert blades, arranged parallel to each

other, whilst at the feet were two polished dolerite axes (see Pl. 97). A few sherds of buff ware were recovered near the pelvis apparently, from a small bowl, whilst the scapula of a bovine lay immediately above the body. A large boulder, on the top of the layer, seems to have marked the grave.

The skeleton rested on yellow earth exactly similar to that above it and this was found to extend for about 6" further down, yielding A ware sherds, notably A2 and 3 wares, and a number of microliths. Beneath this was the dense red-brown disintegration of granite known locally as 'moorum'.

2. VIIIIB (Pl.56). This trench was in point of time one of the last to be excavated, and the results could thus not be checked by an extension to the west or east. It appears that there must have been a pit or some other disturbance which passed unnoticed, for no other way can be found to account for the intrusions of odd B ware sherds, iron slag fragments and even a copper coin (as yet unidentified) which occurred. Moreover the very restricted nature of the cutting was not sufficient to solve the nature of those parts of the excavation that were probably undisturbed.

F. Summary: results of excavation.

1. The sequence of cultures. The sequence is revealed most fully at Site VII. Various periods are also represented at other sites, particularly I, VIII and V. Analysis

of the finds from the different strata reveals the following groups which (read in the light of the stratigraphy) may be arbitrarily related to separate cultures.

a) 'Neolithic A' (Site VII, layers 9,10) characterised by the presence of A1, 2 and 3 wares but the absence of A5. (See Apx. A and Chapter V). The A1 ware sherds include incised and perforated specimens; the A2 and 3 include very small numbers of painted sherds. The layer produced both microliths and polished stone axes, although there was no noticeable technological distinction from the subsequent period. At Site I, however, layer 8, which produced typical A wares, yielded microliths which were distinct in size from the later period (Pls. 102-3). No metal occurred. The soil comprising the layer appears to be a disintegration product of the local rock (Apx. I) whilst the presence of snails may indicate considerable variation of vegetation and climate. The structural remains, burials etc., are discussed at greater length in Chapter VII.

b) 'Neolithic B' (Site VII, layers 6,7 and 8) characterised by the presence of sherds of A5 ware in addition to A1,2 and 3 wares. (Apx. A). The distinctive terracotta bulls found in the earlier period were not noticed. The stone industry was not distinct from that of the Neolithic A, but a fragment of bronze (?) and a copper chisel were found. The Neolithic A and B layers at site VII produced a total of 8 dolerite axes whilst the remaining layers pro-

duced only 2. A similar proportion was noticed in all other sites yielding remains of these cultures. (e.g., Site I and VIIIA and B, Apx. C). The structural and other features of the layers assigned to this culture have been discussed in detail in Chapter VII.

c) 'Post-Neolithic' (Site VII, layer 5), apparently a period during which this particular area was not inhabited but possibly was cultivated. The culture is characterised by the presence of B1 and 3 ware sherds of typical forms, alongside A1 and 3 wares. A2 ware is not found but sherds of A5 ware occur. The layer produced comparatively few stone implements, but no iron objects occurred.

d) 'Pre-Medieval A' (Site VII, layers 2, 3 and 4) characterised by the presence of B1, 2, 3 and 4 wares but the absence of D wares. A few sherds of A1 and 5 wares also occur but they are often weathered. ^{The} Microlithic industry seems to have continued much as in the earlier periods, but iron occurs for the first time (Apx. D). The presence of beads, mainly of magnetite and carnelian is noteworthy. The site appears to have been re-occupied at this time.

d) 'Medieval' (Site VII, layers 0 and 1) contained the first D ware sherds. These were closely parallel to those from Site V, and it seems probable that during the Pre-Medieval period the main centres of habitation shifted

to that region. The period is characterised by the presence of glass bangles.

2. Interpretation of the Climatic and topographical evidence. It appears that in the early stages of occupation, the site was covered with some sort of low vegetation, possibly dense forest (Apx. J below). This, taken with the absence of similar snails in later layers may indicate either a drop in the rainfall during this early period, or the artificial denudation of the hill, or both. The superficial similarity of the soil from the lowest layers of Piklihāl, Brahmagiri and Sanganakallu and the absence of any similar soil in higher layers at any of the sites is by itself suggestive of significant change, but taken with the rapidly rising floor levels of the IB period at Brahmagiri (Br. 21) and the suggestion that some of these layers are the direct result of wash-down, the process becomes visible. Was this change in the vegetation of the hills partly the result of diminished rainfall, and partly of overgrazing? The two processes would certainly aid each other.

3. Other aspects of the evidence are discussed in subsequent chapters. Thus the pottery is analysed in Chapter V, and the interpretation of the succeeding cultures is given in Chapters VII-X. Finally the evidence for dating the cultures is discussed in Chapter XI.

APPENDIX A. POTTERY

At the close of the excavation the pottery from selected sites was sorted and a preliminary classification of wares produced. On the basis of this hasty survey the following tables and distributions of wares have been reconstructed: the pottery, with the exception of a very small collection of sherds representing the Neolithic A wares, was left in the Department of Archaeology Hyderabad.

A more thorough examination has now been made of the far larger number of sherds from surface collections from sites throughout Raichur District, and a final classification made. This has been given in brief in the Introduction (p.15f) whilst the full analysis of wares and forms will be made the subject of the next chapter.

I. Preliminary Examination of Pottery from Site VII.

Ware	A1	A2	A3	A4	A5	B1	B2	B3	B4	D1
<u>Layer</u>										
0, 1	/	-	-	-		/	/	/	/	/
2, 3	/	-	-	-		/	/	/	/	-
4	/	-	15	-	19	/	/	/	/	-
5	146	-	34	-	4	74	-	27	-	-
6	/	4	2	-	5	-	-	-	-	-
7	113	18	26	-	9	-	-	-	-	-
8	71	31	24	-	2	-	-	-	-	-
9	48	15	28	-	-	-	-	-	-	-
10	505	40	78	-	-	-	-	-	-	-

Key: / indicates presence of ware usually in considerable quantity: numbers indicate number of sherds where actually counted.

In Layers 4 and 5, A2 and A5 wares were not differentiated.

The pottery which was brought to London will be found in the catalogue accompanying Plate 59.

APPENDIX B. TERRACOTTA OBJECTS.

The distinctive bulls from Site VII, Layer 10, are illustrated and described in Plate 94, whilst a note on the technology is given in Chapter VI, p.329.

APPENDIX C. STONE OBJECTS.

Microliths occurred in almost every layer of every site. Polished axes, dolerite flakes, querns and rubbing stones were also encountered. In general, only those found in Sites I, VII and VIII are of interest on account of their occurrence in stratified deposits, and the remainder together with the many surface finds made at Piklihal can be treated only typologically (see Ch. VII pp 314f). A preliminary analysis was made on the site. Later about half of the microliths from the excavations were selected by the Hyderabad Archaeological Department and brought to England. There appears to have been some confusion connected with this division, as the figures and provenances recorded on the finds as they were ultimately received in England in many cases did not tally with those recorded on the site.

We shall list a) field analysis of finds from Sites I, VIID and VIIIB; b) analysis of specimens received from

Sites VII, A,B and C and Site VIIIA (with cross reference to first figures where necessary). A catalogue of selected specimens will be found accompanying Plates 97, 102-4.

I. Site I.

Layer	Blades	Flakes	Cores.	Misc.	Dolerite Axe	Dolerite Flake
1	24	5	3	1	-	-
2	134	-	5	-	-	-
3	27	15	-	5	-	-
4	33	-	-	-	-	-
5	14	5	-	1	-	-
6	-	-	-	-	-	-
7	2	6	1	1	1(broken)	1
8	9	1	-	-	-	-

(Pls. 102-3)

II. Site VIID.

Layer.	Com. blades.	Bulb ends.	Distal ends.	Cen- tres.	Backed blades.	Flakes.	Cores.	Misc.	Neo- liths.	Others
0	6	8	-	1	-	6	-	1 lunate	-	2 fabricat
1	3	3	-	-	-	3	-	-	-	-
2	6	7	-	-	-	3	-	-	-	-
6	7	11	4	10	-	7	1	5	1 broken 1 polished	-
7	-	-	-	-	-	-	-	-	-	-
9	1	5	-	-	-	1	-	-	-	-
10	-	-	-	-	-	-	-	-	1 part polished	-
11	9	6	4	6	-	6	1	14	1 broken	-

III. Site VIIIB.

Lay- er.	Comp. blades.	Bulb ends.	Cent. pieces.	Dis- tal ends.	Backed blades.	Lun- ates.	Flks.	Cores.	Misc.	Neo- liths.	Oth-
1	13	15	12	4	2	-	5	5	3	-	-
2	9	26	11	8	3	-	6	1	-	-	-
3	8	13	-	-	3	2	2	-	-	-	-
4	2	2	3	1	-	-	-	-	-	-	-
6	6	6	11	1	1	1	6	1	-	-	-
7	-	3	2	-	1	-	-	-	-	1 broken	-
8	1	2	3	-	2	-	4	-	-	-	-
9	1	-	1	-	-	-	2	-	-	2	-

IV. Site VIIIA, London Analysis (original figures).

Lay- er.	Cores blade	Cores Other	Flks.	Re- touched flakes.	Reju- vena- tion flakes.	Blades	Backed blades	Geo- met- ries.	End- scraps.	Neo- liths.
1	-	-	1(2)	-	(1)	11(22)	-	-	-	-
2	(4)	-	23(10)	-	(2)	54(72)	2(3)	(3)	1	-
3	-	-	8(4)	-	1	17(21)	1	-	-	-
4	(1)	-	1(6)	-	-	13(34)	-	(1)	-	2
5	1	-	11(5)	-	3 (1)	21(34)	(1)	3(5)	-	-

V. Site VIIA, B, C & D. London Analysis.

Lay-Bld.	Other		Re-	Rejuv.	Blds.	Backed	Geoms.	Misc.	Dol.	Do
er.cores.	cores.	Flks.	touched	flks.		blades.			axes.	Fl.
			flakes.							

0	1	-	11	-	-	25	-	-	-	2	-
1	-	-	6	-	2	7	-	-	-	-	-
2	-	-	11	-	1	20	?1	-	-	-	-
3	-	-	2	-	2	21	1	-	{1 end scraper (1 awl	-	-
4	-	4	10	-	2	29	2	1	{1 end scraper	-	-
5	1	-	3	-	1	5	-	-	-	-	-
6	1	-	20	-	2	54	2	-	{1 trun-2 cated blade.	-	-
7	1	-	22	-	-	29	-	-	{1 end 1 scraper (1 micro- lith.	-	-
8	-	-	4	-	3	24	2	-	-	2	-
9	-	-	7	-	3	19	-	1	{1 end 2 scraper	-	-
10	1	-	14	-	3	21	1	-	-	-	1
11	1	-	9	-	1	25	-	-	-	1	-

(See Plate 107)

APPENDIX D. METAL OBJECTS.

All finds of metal are with the Archaeological Department, Hyderabad. The following finds were noted during excavation and may be taken as preliminary reports only.

1. Tanged knife of Iron (from pit in Layer 2, Site VIIC) length c. $4\frac{3}{4}$ ", width of blade $\frac{7}{8}$ ".
2. Tanged sickle of iron (same as 1 above). Length c. 8".
3. Disc of bronze (?) (Same as 1 above) $1\frac{1}{2}$ " diameter, about $\frac{3}{8}$ " thick.
4. Fragment of rim of bronze bowl (?) (Layer 5, Site VIIA).
5. Fragment of iron, no form. (Layer 3, Site VIIA).
6. Chisel of copper. Rectangular section with squared blade and turned end. (Surface of Layer 4. Site VIIIA) Length $6\frac{1}{4}$ ".
7. Strip of iron (from Layer 3 Site VI). Length c. 2".
8. Iron strip with iron rivet at either end (same as 7 above) length c. 2".
9. Fragment of copper (Layer 2 Site I).

APPENDIX E. BEADS.

All beads found in the excavations are with the Archaeological Department, Hyderabad. The following preliminary note on finds was made in the field, and requires further examination of the objects. This could only be carried out after cleaning in a museum.

Site.	Layer	No. Found.	Notes.
I	1	3	? Magnetite disc cylinder circular.
"	2	2	Ditto
"	"	5	Glass (form not noted)
"	3	5	? Magnetite, disc cylinder circular.
"	"	1	Carnelian, (form not noted)
"	"	1	? Shell (" " ")
VII	2	1	? Crystal, Hexagonal bicone
"	"	1	Magnetite, disc cylinder circular.
"	3	2	Carnelian, (form not noted)
"	4	2	Magnetite disc cylinder circular.
VIID	1	2	Ditto
"	1	1	Banded Agate, (long cylinder circular).
"	2	4	Magnetite, disc cylinder circular.
VIIIA	3	1	Ditto
"	4	1	Ditto
VIIIB	1	1	Ditto
"	"	1	Carnelian (form not noted)
"	2	1	Magnetite, disc cylinder circular.
"	4	1	Ditto
"	8	1	Carnelian (form not noted)

APPENDIX F. BANGLES.

<u>Site.</u>	<u>Layer</u>	<u>No. of fragments.</u>	<u>Material.</u>
I	1	21	Glass, monochrome green, blue, brown.
V	-	many	Glass, monochrome blue, green; bichrom brown and yellow.

APPENDIX G. HUMAN REMAINS.

All human remains are with the Department of Archaeology
Hyderabad. (See Plates 54a and b; 55a and b, 58).

APPENDIX H. ANIMAL REMAINS

Animal remains from all layers of the excavation,
including teeth, bone fragments and calcified dung, were
retained by the Department of Archaeology, Hyderabad for
"local study".

APPENDIX I. SOIL SAMPLE

A sample of soil from Site VII, layer 10, was analysed
in the Department of Geochronology, Institute of Archaeology,
London. Extracts from the report are appended.

1. Particle size	>	6.0 mms.	0
	>	2.0 "	1.5%
	>	0.6 "	42. %
	>	0.2 "	44. %
	>	0.06 "	7.6%

2. PH content 9.35.

CaCO_3 present in distinct grains but not in soil as a whole.

Humus 51 mgms./100gms.

Phosphate (P_2O_5) 130 mgms/100gms.

APPENDIX J. SNAILS.

Snail shells from Site VII, Layer 10, were submitted to the British Museum (Natural History) for identification. The species was identified as a Japonia, probably subgenus Lago-chilus bunguranensis Smith, the type specimen being from Natuna Island. Other specimens of the same species were submitted to Mrs. Van der Feen of the Zoölogisch Museum, Amsterdam, who reports that whilst the specimen is one of the Cyclophoridae it is certainly not a Lagochilus. She further reported: "all these Cyclophoridae live on the bottom (never in trees), among dead leaves, moss and other low vegetation, preferably in dense forest".

CHAPTER IV: NOTES AND REFERENCES

1. McCrindle, J.W. Ancient India as Described by Ptolemy, p. 179.
- 1a. Subba Rao, loc. cit. 1949, p.64.
2. Crooke, W. Bull Baiting, Bull Racing, Bull Fighting Folklore XXVIII 1916.
3. Kanakasabhai, V. The Tamils of 1800 years ago.
4. Gordon, D.H. Man 1951, No. 204 gives comparable specimens from Kupgal, Bellary.
5. Foote, I.P.P.A. pp27-9.

CHAPTER V.

THE POTTERY OF RAICHUR DISTRICT.

CHAPTER V.THE POTTERY OF RAICHUR DISTRICTI. Technology.A. Neolithic (A) Wares.

This section is based upon a preliminary study of the sherds excavated at Piklihal, and is fortified by a detailed study of a small number of selected types from the excavation (the bulk having been left in Hyderabad), and of sherds of similar wares found as surface finds at other sites in Raichur District. A further group of sherds was collected by Col. D.H. Gordon in a small cave near the Asoka edict cave at Maski. These clearly conform in ware and form to the Piklihal specimens.

a) Body Clay. The excavated specimens are nearly all of a very small particled clay with rare occurrences of largish fragments of quartzite and other refractories. In a few surface finds and some specimens of largish vessels from Maski there is a much more regular admixture of finer refractories (a feature that is common to the wares of subsequent periods). Nearly all the excavated sherds contain a large quantity of particles of mica. This seems to indicate that high firing was not possible, as mica is a powerful flux. Indeed, those sherds that had no such mica included several of the highest fired specimens, and also comprised the finest particled clay. There is no trace of straw or other vegetable matter being added to the clay, the source of which could not accurately be

determined, although it seems likely to have been a secondary clay formed by silting up of field-terrace walls; and the mica (which is noticeably present in A wares wherever they have been found may well be added as a loading (possibly for aesthetic reasons).

b) Shaping. Of the sherds from the excavation studied only one is undoubtedly wheel thrown; this came from a low level of Site VII at Piklihal and is assignable to the A culture. Of the remaining sherds studied none show the almost inevitable traces of wheel throwing, although this could be accounted for by the widespread use of burnish as a surface finish. Of the total number of sherds studied a small number is, without doubt, hand-made (for example No. 47.75). Of the remainder, a few suggest by their regularity of form that they were possibly thrown (e.g., Nos. 91, 9(a), 47.74 etc.) The great majority, however, combine a regularity of form with an absence of wheel throwing marks. This may possibly indicate the use of something approaching a tournette. The majority of the vessels appear to have had a rounded base, and this was obtained by beating, probably on a terra-cotta form (e.g., No. 91.20) with a wooden beater. A number of sherds from Maski and Piklihal bear clear traces of this beating process, and appear to indicate that it was effected from the exterior of the vessel, probably onto a "form", a broken sherd, etc. A similar sherd or base of wood or stone could have played a part in the shaping, being slowly revolved as the rim

was formed. The traces of the rotation of the vessel in manufacture are clearly seen in No. 47.70 which appears to have revolved 4 or 5 times in shaping, whilst 47.73, 47.71 and 91.6(a) show traces of thumb impressions on the outer surface below the rim. There are, however, at least two examples of flat based vessels, and Subba Rao found several more specimens at his excavations at Sanganakallu.¹ Unfortunately no specimens are available for study in London and it is not possible to notice the base, which might supply valuable evidence on shaping.

The inner surfaces of many sherds show evidence of scraping. This was presumably done while the vessel was leather hard, and in some cases may have contributed to the shaping of the rim. In a few examples (91.6(a)) the scraping seems to have been done on the tournette with long regular sweeps, but the more common form is with short strokes in many directions, and was clearly not done during rotation.

It is interesting to compare the techniques of shaping with those noticed by Aiyappan among the Uralis of Wynaad.² These modern hoe cultivators do not use the wheel, but either make their pots by hand or by beating with a wooden mallet. The neck is made by scraping and the rim is cut clean. When the clay is leather hard the inside is scooped out - a laborious and lengthy process. During these processes the vessel rests on a rounded wooden board. Finally after further drying in the sun, both inside and outside are burnished with a quartz pebble and the vessels

are fired to a dull brown colour in an open kiln. The entire craft is carried on by women. So important is this description of the surviving technique that it would seem that these pots form a distinct class and that the terminology should include "excavated" pots.

The shaping techniques of other typical features of the A wares may now be listed:

Handles: three types are found - knob, lug and loop. The knob may be inferred from the incomplete hand-modelled example in the centre of the saucer lid 47.75. The lug was also hand-modelled and luted on to the rim of the vessel before drying (91.14(a)). The loop handle is represented by a single example from the Neolithic A period. It was rolled and then luted.

Lips. A number of lips occurs; they are made in the same way as the lugs (91.18, 91.19).

Spouts. Two type occur; the finger modelled often of considerable diameter (No. 91.16, 91.17) and the formed spout (No. 91.9(a) and 91.15). The latter seem to have been formed by rolling around a stick and luting on, or modelling with the fingers directly on the vessel using a stick as form.

Footed Bases. The flat base of the type noticed at Sanganakallu ³ occurred very rarely in Raichur A ware (no. 47.2). Examples of the footed base of the sort found at Brahmagiri ⁴ were not found in the A ware of Raichur. Several examples of a different kind of footed base were noticed

(none illustrated). These are of A2 ware and constitute the base of a round bellied pot. Whilst the clay was leather hard a simple ring base was luted on. This was rarely more than $\frac{1}{2}$ " in thickness, but was evidently sufficient to keep the vessel steady.

Legged stands. The example studied appears to have been made by rolling the cylinder around a stick and luting it to the vessel at one end and to the terra-cotta legs at the other (91.13(a)). The smaller example from Maski appears to be hand-modelled (47.76).

c) Surface Treatment. Analysis in the field of about 700 sherds from Piklihal I (8) and (12) and VII (8), (9), and (10) revealed that 57% were without any clear trace of burnish, whilst 43% were recognizably burnished. The former group included many thick sherds probably of large storage vessels. The latter group could be further divided into 21% burnish of body clay, and 22% slipped or dressed and burnished. For the purposes of classification the unburnished ware is designated A1, the burnished body clay A2 and the slipped or dressed and burnished ware A3.

Burnish. The burnish is applied probably with sticks or a pebble. In the case of open bowls it is present outside and in, and in necked vessels as far inside as was easily accessible. A number of A3 fragments were burnished on the outside only, the inner side being scraped. The general direction of the burnish marks is roughly horizontal, but never

so regular as to suggest wheel-turning. The burnish was applied in short strokes. In a few cases there are traces of regular vertical burnish underneath the horizontal strokes. In some examples the strokes are in many directions and appear to be haphazard. The process was completed before firing, probably whilst the clay was leather hard. The A5 ware which appears to be a development of the A2 is burnished.

Care should be taken to distinguish this tool finished 'burnish' from the hand-smoothing of the surface of a pot. This latter process we shall designate "smear".

Slip, or dressing. There can be little doubt from the colours resulting from firing that the slip or dressing applied was in origin a soft haematite which was ground and either mixed with water to form a liquid dressing or possibly applied as a powder (although the surface appearance suggests the former). After the application of the slip these wares were generally burnished, but a number of sherds show that parts were left unburnished (the lug 91.14(a)). It is not possible to determine until analysis is made whether the haematite was derived from the rich deposits mentioned above (p. 47) and comparable to the finds of lumps at Piklihal and elsewhere,⁵ or whether it was merely a haematite rich earth. The dressing of the A5 ware resembles that of B1. It is probable that the main distinction of it and the A3 ware is in the temperature of firing, the A5 being fired to a degree at which surface fusion occurred. The

A5 also appears to lack the mica body content, and thus appears as a perfect bridge of the A and B wares.

Abrasion. A single sherd from the Neolithic A period (other comparable sherds were noticed on the site but are not available for study) showed a series of parallel abrasions applied with such regularity as to suggest wheel-turning. The abrasions are very fine.

Incisions. A number of sherds (all without slip or burnish) were incised with some pointed object before firing. Two forms of decoration were noticed; a herring-bone pattern (30.1) and a series of parallel lines. The incised lines in all cases appear to have been on the outside of the vessel. No wheel incised patterns or decorations occur.

Painting. Less than 1% of the sherds from Neolithic levels at Piklihal VII were painted on slipped A3 ware. Rather more were probably originally painted on A2 burnished ware but the painting was very faint and faded almost as soon as excavated. The paint in both cases appears to have been a haematitic ochre of dull red or purple colour applied after firing. At Piklihal Red or Buff slipped and burnished ware (A3) with painting was found in both Neolithic A and B levels (Sites I and VII). Unburnished buff and red slipped painted sherds, contrasting with the A3 wares in that they were all clearly wheel-thrown, were found as surface finds only, and appear to be later although the colours of slip and paint are similar to the A3 wares. These surface finds we shall designate A4. They resemble

closely surface finds from Brahmagiri, one of which had a form that appears foreign to the Neolithic and was also wheel thrown. Wheeler claims to have found unburnished slip painted wares together with burnished in his Neolithic A alone, at Brahmagiri.⁶ At Piklihal the A2 painted sherds came from levels of both Neolithic A and B. The only decorated form noticed in this ware was the large open bowl (Form A1) which had a single band of paint around the inside of the rim. This painting appears to be similar to that recorded by Wheeler at Brahmagiri in the IB levels (No. T.74, p.231 and 232), and it is strange that Wheeler ignored it there, particularly as a similar painting technique on a red (? unburnished) wheel-thrown pot of typical B/(Post-Neolithic) form,⁷ suggests a level and dating for the A4 ware surface finds mentioned above and the survival of the Neolithic painting technique into Post-Neolithic (Megalithic') times. This hypothesis (based upon almost single sherds at Piklihal and Brahmagiri) finds some further support in the occurrence of painted sherds (? of a type of A2 ware) in the earlier and later sub-periods of Phase II at Sanganakallu.⁸

The range of patterns from Raichur A3 wares is very limited. From Maski come two specimens with fields of thin parallel and radiating lines, and from Piklihal of cross-hatched lines forming perhaps the point of a star pattern around the neck of a vessel (Nos. 47.6 and 91.12a).

Another sherd from Piklihal Site I had a fragment of closely drawn wave forms (W). The cross-hatch pattern has parallels at Brahmagiri and as a surface find in Bellary⁹.

and also in painting on pots from Jorwe (see below p 394f).

Decorations. The most general form of decoration is the single or double row of finger or thumb tip impressions. This occurs mainly on A1 and A2 ware sherds (91.4 and 7.7). It also occurs around the edge of two lips (91.18, 91.19) of similar wares. These impressions must have been made before firing. Another device noticed was the application of a fillet of triangular section at the base of the neck of large jars of A2 ware. This fillet was applied after shaping and before burnishing or firing.

Perforated sherds. A number of A1 sherds were found with perforations. These were never large enough to distinguish the forms of the original vessels. They occurred in Neolithic A and B levels. The perforation appears to have been made by piercing the green-hard clay with a slender stick or straw and moving it around to enlarge it. These sherds are characteristic of the neolithic wares at Brahmagiri and Sangankallu, whilst Sewell collected numbers of specimens in the Bellary hills (see above p.11).¹⁰

d) Firing and the results of firing. No direct evidence is available for the type of kiln used, but it may be inferred from the great unevenness of firing of the specimens studied, and from such factors as the high proportion of mica bearing sherds, that the kiln was a simple open bonfire type and that the temperature range was strictly limited thereby, whilst any sort of systematic control was

not possible.

The results of firing. A1 and 2 wares showed a remarkable range of colours ranging from Black, Black and Grey, Grey, Buff, Brick Red. A feature that was shown by a large number of the heavier sherds was "black core", caused by insufficient oxidization, too short a firing time and possibly by the too rapid fusion of the outer surfaces, resulting from the presence of mica, lime, etc. in the clay. Another common feature of the vessels is "blotchiness" caused by only partial oxidization, a condition common in the bonfire kiln. Black, grey and brown blotches occur commonly on the larger sherds examined, particularly the examples from Maski caves. The fault was certainly less common in the Piklihal excavations. Another fault that was comparatively common was a tendency to lamination of the clay under firing. This may have been caused by too rapid firing, but it must have been emphasised by the high shrinkage of micaceous clay.^{11.}

A3 wares showed a similar range of body colours, with the addition of the haematite rich slip which tended to become black under low firing conditions in a reducing atmosphere, and buff to red under higher firing and oxidization. The surface fusion and shrinkage effects are clearly visible on a number of sherds. A very small number of sherds had been fired to a relatively higher degree, and showed a black or chocolate surface on a dark grey body. The terra-cotta bulls, the legged stands (Nos. 47.76, 91.13 (a)) and the

fine bowls (91.6(a), 91.7(a)) are all in the red slipped finish, and probably represent the colour that was aimed at for these obviously special objects.

The open bowls of form A/1 are usually in buff or grey, resulting no doubt from the relatively lower ferric content of the clay, and in a few cases take on an almost silvery-grey sheen that seems to represent the desired finish.

A5 wares. A final group of sherds (and sometimes forms) do not occur in the Neolithic A, but are present in the B. They form a class that probably developed from the A2 wares, but appear to have been treated with some ferrous rich slip. 91.11, 91.13, 7.1 and 91.10 are typical specimens. The slip after firing turns a greeny-creamy-grey or buff, usually mottled and frequently blackish-grey with crackle on the inner surface. Some examples are probably wheel thrown (91.11) whilst others are certainly hand-made (7.1). In a minority of cases, with small vessels, the buff tends towards red, and the final result is clearly related to the B wares and at Piklihal these form a transition from A to B wares. Similar wares were noticed by the writer among the finds from Bahal (see above p.396). The crackle finish that is visible on some of the specimens examined is yet another technological link with sherds described by Wheeler from Arikamedu and assignable to the "Arretine" period at that site;¹² whilst the mottled effect probably represents a failure in technique in the manufacture of red and black ware, and again calls for comparison with sherds from Bahal

and Arikamedu.

B. Wares

The second great and distinct group of pottery collected in the District comprises red-and-black, red and black surface vessels, of the Post-Neolithic and Pre-Medieval A and B cultures. In absolute time this pottery appears to have been made and used for about 1000 years, and as the bulk is so enormous an arbitrary division will be made on the basis of form and ware (below p. 542f).

Within this frame-work the first group can be seen to relate to the Post-Neolithic culture and period, and both form and ware are characterised B1. The second great group comprises mainly the B2 and 3 wares and relates to the Pre-medieval A and B cultures and periods. Viewed from the stand-point of technology the whole range of B wares is distinct from the earlier A and the later D wares. Thus it is considered justifiable to distinguish subdivisions of B wares which have a chronological and cultural significance in addition to their morphological and technological validity. For this reason the B4 and 5 wares are included in the group on the basis primarily of chronology and form, although it could be argued that technologically they are distinct. Thus in this section the underlying similarities of technology are taken as the basis, and the distinctions of the sub-divisions are discussed in this context.

This section is based entirely upon surface finds, particularly from Piklihal, Benkal Forest, Kopbal, Kallur, Maski and Anegundi. This was unfortunately necessary as the excavation at Piklihal was primarily in areas where regular occupation seems to have terminated early in the Pre-Medieval A period. On the basis of morphology, however, the specimens chosen for study may be taken as having a close correspondence to the chronological and cultural periods, and until further excavation is carried out at suitable sites this evidence may be accepted as the best so far available.

a) Body Clay. The clays of the B wares are distinguished from those of the A by the absence of mica. The second distinguishing feature is in the coarseness of the particles; in the A wares it appears that fine clay was selected probably from riverine deposits. In the B wares, viewed generally, the presence of some refractory is always noticeable, usually quartzitic sand. The general tendency is for this refractory to become coarser in successive periods. Thus it is fine almost uniformly in the B1 ware, and less fine in the B2 and 3, particularly in the B3 wares of the Pre-Medieval B period which have often coarse lumps of grit remaining. This feature could be accounted for by the type of throwing employed, if such throwing demanded greater plasticity. It seems certain that sand was one of the natural constituents of the clay used which was probably a secondary deposit. There is so far no clear archaeological

evidence for the source of the clay.

One of the results of the quality of clay can be seen in the relative thickness of vessels of B1 and B2,3 and 4 wares. This is clearly visible in Pl. 86., Group I, and Pl. 88, Group V. One of the most constant distinguishing features of the B1 wares is their thinness both in comparison with the A and D wares and of the other B wares.

b) Shaping. The overwhelming majority of the B ware sherds show clear traces of wheel throwing. This marks them off from the A wares. Within the B wares, there is, however, a finer distinction between the B1 and 2, 3 and 4 which merits separate consideration of each group. Before turning to this task an overall survey of A and B wares reveals (Pls. 85 to 89) that in general the body thickness and weight of the neolithic vessels is greater than that of the B. Form B/104 is almost the only example of a hand built vessel. It is a large thick walled storage jar, reminiscent in ware of modern examples used by the Madigas in leather tanning and may be assigned to the Pre-Medieval B period. The crucibles, form B/120, are also hand-made as are some of the very small vessels for example form B/15.

B1 ware. The bowls of Group I (Pl. 86 left of double line) all appear to have been made by a somewhat similar process. All show clear traces of wheel throwing on the upper part of the walls, whilst the rounded bottom (often below a clearly defined angle, as in Form B/11) was formed

by hand after cutting off the wheel. The same process is true of the pots of Group V (Pl. 88 left of double line), although a greater part of each pot was directly thrown. It is probable that the method employed in the manufacture of the rounded bottoms of Groups I, III and V, and which is still in use in S. India,¹³ involves the cutting off of the partly completed vessel. This is achieved by drawing up a cylinder of clay upon the wheel and cutting off the roughly formed vessel with an open bottom. This is then drawn in towards the centre on a stone "anvil" (resembling No. 91.20) with a wooden mallet, and when the belly is finished and rounded it is subjected to a second beating process to smooth the surface. It is found that the finished vessel is considerably larger than that which was removed from the wheel, and the walls are correspondingly thinner. This technique of shaping is very widely used in modern India, although the writer does not seem to be aware of it.

Of Group II the tall pointed-based 'horn' cup seems to have been thrown entire, probably pinched, from the wheel and finished at the base by hand. The little, thick, cup-bowl form, B/15, was hand made (as has already been noticed). The shaping of Group III vessels appears to have been similar to Groups I and V. The group V vessels include for the first time a wide variety of distinct rims. Of Group VI the lids, Form B/78, have been thrown inverted, N/79 is also thrown inverted, pinched off and the knob finished after removing from the wheel. B/82 seems to have

been thrown similarly to B/79, taken off, inverted, and respun to finish the upper part, although this could have been thrown separately and then joined, although none of the specimens examined showed traces of this. The ringstands (Forms B/96) were probably thrown simply, cut off the wheel and inverted to finish the lower rim. The hollowfooted cup and bowl forms B/97, 98 and 99 were probably thrown in a similar way to B/82. There is nothing to suggest that turning played any significant part in the shaping of any B1 ware vessels. It is interesting also to notice that there is a complete absence of distinctive lips, handles and lugs of the sort characteristic of the A wares.

B2, 3 and 4 Wares. These contrast very markedly with the B1. There is a much greater range of variations of form, particularly of the rims. The body clay is generally coarser and the vessels therefore considerably heavier. There are many indications of mass production as opposed to the more leisurely shaping of the earlier wares. This tendency is clearly seen in the Group I vessels. Form B/1 is a large flat bowl, and forms B/12 and B/13 are small deep bowls; all three are wheel thrown and cut from the wheel with the form already complete. The coarse pinched-off cups, form B/18, are another good example of mass production. Similarly in Group V the vessel, in at least one case (Np. 36.22), was finished with a flat base, although there can be no doubt that many vessels of this group were finished in a similar way to the technique outlined for the B1 vessels of this

group. The great variety of rims include many turned examples and indicate again speed of working. Of Group VI the heavy platter lids, form B/84 were in part at least thrown, as were the recurved lids of type B/90. Form B/93 is a high stopper lid that was thrown as drawn and cut off at the base after closing the top of the dome. Many of the large vessels of Group VIII appear to have been thrown.

Tooling. Numbers of rims, particularly of Group V and mainly of B3 ware, show traces of tooling after throwing to obtain regular and sharp outlines. Turning does not appear to have been employed to regulate body thickness. In the tooling of the rims, various implements seem to have been used: the process would be carried out whilst the clay was leather hard.

c) Surface Treatment. The B4 and B5 wares are generally without slip, and in this respect differ from the great mass of sherds examined. The B1, 2 and 3 ware specimens comprising over 90% of the total have all been treated with a slip. This appears to have been fundamentally the same in all cases, but distinct appearance was produced by quality of slip, application of burnish, firing conditions. These differences do to a great extent coincide with the B1 and 3 wares, and may therefore be treated by their characterisation.

Slip. The slip appears to have been made from some ferrous rich earth, varieties of which occur frequently in

Raichur (above p.48). One source would be the earthy haematite deposits (reddle) (above p.47) but it has been suggested that varieties of hydrated oxides of iron (limonite goethite etc.) could also be used as firing them produces haematite.¹⁴ In the B1 ware the slip is generally thinly applied and burnished. In the B3 the slip seems often to have been of uneven thickness, sometimes so thin as barely to cover the surface, at others so thick as to form a treacly covering. In the B1 ware (which closely resembles the A5 in these respects) the slip appears to have been applied with a cloth, whilst the B3 sherds often suggest dipping. In the B3 the burnish is less common.

It has also been suggested that the slip and burnish processes may have been combined, in a very few cases, and soft reddle applied direct to the leather hard vessel. This is perhaps suggested by a very few specimens which show that only part of the surface (usually inner) has been slipped whilst the intervals remain unslipped, leaving a series of alternate lines. This may, however, rather be explained in terms of light pressure from a rag or even the fingers in the application of a reddle slip, and in no specimen examined did the resulting surface compare with an ordinary burnish. Whatever the surface dressing was it seems that it was applied in a mucilaginous vehicle.

In Group I vessels the slip was applied inside and out. In many Group V vessels it was applied only outside and at the neck. In other large vessels of Groups IV and VIII,

and in vessels of the Pre-Medieval B period, irrespective of group, the slip is used sparingly and is often of inferior quality in the finished products.

Burnish. The burnishing of the B1 wares is generally much finer than the A, and as a result the visible traces are often hard to find. The process seems rarely to have been carried out on the wheel. In the B2 and 3 some specimens have been burnished, particularly of Group I, but the burnish becomes less common in the B3 ware and is totally ^sab_Aent from the Pre-Medieval B period specimens. The actual technique of burnishing introduced in the B1 wares must have ⁱddiffered from that of the A, and probably resembled that reported by Jagor from modern practice.¹⁵ This was that a slip of red ochre was applied to the leather hard vessel, and then burnish was carried out with a string of seeds with the addition of sesame oil. Dumont has reported a similar burnishing technique from Madura, with the use of coconut oil. It is probably this refinement that accounts for the much smoother finish, and the absence of visible traces of the burnisher of the sort that characterise the A wares.¹⁶ The 'seeds' appear to be usually those of the ~~area~~ nut, and it has been suggested that some chemical reaction may result.

Incising. A number of vessels show traces of wheel turned incisions. These generally take the form of circular or spiral lines made with a pointed tool. Incised patterns,

often described as thumb-nail but frequently made with a tool, are also applied particularly to the rims of Group V.

Painting. Three distinct types of painting were encountered. Two are unique examples, whilst the third is so common as to deserve notice as a distinct ware (B2).

1. At Piklihal a single sherd occurred of B3 ware with post-firing painting. A flat white 'chunam' wash was applied to the outer surface of the sherd and on this zig-zag strokes of purple ochre were applied. An exactly similar technique is seen in two terra-cotta figurines in the Maski museum (Pl. 95, 1 & 2). These were covered with a chunam 'wash' and the features were then outlined with a paint of dark purple-blue colour. The figurines may be assigned to the Pre-Medieval period and a tentative date given to the technique (which appears to link up with similar painting and washing of 'Kalaśa' pots for weddings and ritual purposes which survives to this day in many parts of India.)

2. At Manvi sherds were found of two remarkable vessels of B3 red ware. The haematite slip appeared to have been 'painted' with some whitish paint whilst not yet dry, and the resulting S-shaped pattern was of a creamy pink. The tool seems to have been the finger tip. (No.86. 11 and 12, Pl. 75). This technique is reminiscent of the finger tip painted spirals and circles from Brahmagiri, Chandravalli and Kondapur (above p. 107) whilst the ware and form leave little doubt of a pre-medieval dating.

3. The B2 painted ware ('Andhra Painted Ware' of Wheeler's report) is a pre-firing painting of a whitish substance, probably lime or kaolin, in a limited range of patterns on a limited number of B3 forms. The painting was applied after the application and drying of the regular haematite slip, but before its firing. Over the painting a further thin semi-opaque slip, presumably of haematite, was added, and the whole was ready for firing. Wheeler rightly associated this ware with that found in the cist graves of Coimbatore.¹⁷ Holder considered that the technique as exemplified by the Coimbatore wares represented an inlay of kaolin and a subsequent coating of Lac.¹⁸ Naiyar on the other hand examined many specimens of the ware and reached conclusions substantially similar to those of the present writer.¹⁹ It thus appears that the Coimbatore grave painted wares and the B2 wares are technologically similar. Naiyar further considered that the paint was applied only after the main firing, and was subsequently lightly refired. That the final process was a rub down to expose the white paint and remove the second slip. This is certainly not the case in the specimens from Raichur. There is no clear indication of two firings, nor of the rub down. The post firing condition of these specimens is described below.

An interesting similarity of technique seems to be that of the unique 'cup' (47.25) from Maski which was

adorned with a series of dots of lime paint. The same technique appears to be indicated at Arikamedu (Southern Sector) by a sherd illustrated by Wheeler.²⁰

Some idea of the frequency of occurrence of vessels of this ware may be had by comparing the numbers of Group I bowls illustrated (Pl. 86). There are 18 of B1, 17 of B2 and 51 of B3. The percentage of B2 painted sherds in all other groups is considerably less.

Abrasion. Numbers of sherds, mainly of Group I, B3 wares, show extensive fine abrasions on their inner surfaces. These are distinct from the pre-firing burnish and must represent the results of cleaning the vessels with sand. Examples are 36.15, 36.15A, 36.15B. It is, perhaps, significant that the examples quoted are all sherds of vessels which appear in Raichur together with objects suggesting Andhra rule.

Scratched Decoration etc. A single sherd of B1 ware from a grave in the Benkal Forest (6.1) showed a post-firing scratched 'mark'. The significance of these marks which occur on B1 vessels wherever they are found in quantity has evoked a considerable but as yet inconclusive literature. As there is little to add to the evidence collected by Hunt at Raigir, a single reference is quoted²¹ as giving a reasoned notice of the problem.

In the B3 ware, and assignable to the Pre-Medieval A period the use of post-firing scratched designs of floral

and geometric patterns is attested by sherds in the Maski museum.

Impressed Decoration. The thumb and finger tip impressions so characteristic of the A wares continue less frequently in the B. The decoration is applied to rims. (46.71) and also occurs on large hand-made storage vessels (86.20, 86.15). In the latter it is found, as in the A wares, associated with applique decorations in the form of triangular sectioned fillets. In the Pre-Medieval A period at Maski and Kopbal a refinement of this type of impression is found in the impressing of moulded knobs and, characteristically, of rosettes and wheel patterns of a type common at Kondapur and Nagarjunikonda (Nos. 47.83, 47.81, 36.55). Another rare form of impressed design comes from a similar period at Maski (No. 47.92, Pl. 93a, No.9). This entails the impression of the end of a hollow bamboo or other tube into the surface of the clay. The technique, and also the form involved suggest close affinity with similar sherds from the "Late-Sātavāhana" wares of Kolhapur.²² The nature of the ware is yet another feature that suggests a comparable dating for this specimen (Pre-Medieval B). The impressing technique is well known in northern terra-cottas. A refinement of the applique impression occurs on a sherd from Maski now in the Hyderabad Museum. This specimen shows a moulded band of elephants in a forest. All these decorations were done while the clay was leather hard and before the application of the slip. A distinct form of decoration

is the cord impression which occurs mainly on B1 wares of Group V.

d) Firing and the Results of Firing. The B wares, viewed as a whole, show far more consistent firing at a higher range of temperatures than the A. They also demonstrate a greater degree of control of temperature and conditions of firing. From this view point they represent the high water mark of the tide of ceramic ability in Raichur up to the present time. It is to be regretted that no information is at present available upon the potter's kiln at this period. The basic technique of the B wares is, however, clear: it consisted in a control of oxidization and reduction in the kiln. Thus of the B1 wares, the great majority of vessels examined were red-and-black, resulting from the oxidization of only a part of the slipped surface. In practise the oxidized parts turned a reddish colour, ranging from a dark greenish-buff to a regular chocolate, with temperature and, possibly, with the presence of other substances - alumina etc. - in the body. The reduced parts, which generally included the inner side of the Group I bowls and sometimes also a part of the outside around the rim, turned a dark glossy black. The outer slip which covered the painting in the B2 wares seems to have reacted in exactly the same way as the lower haematite slip. Where it covered the paint and was fired under oxidizing condition it turned a dull orangy-red, whilst under reducing condition it turned a dirty grey. Another effect of firing was that

the paint and the overslip flaked away: where this occurred the underslip remained differentiated from the adjoining surface, turning a purple-pink under oxidizing and a dull black-grey under reducing conditions. The temperature was evidently sufficient to bring about a surface fusion, and this may account for the almost universal 'black core' of all vessels of B1, B2 or B3 wares in marked contrast to the fine reds and pinks of the B4 ware bodies, which being unslipped remained porous throughout. It is not clear which method was used to produce the red-and-black ware. Various suggestions have been put forward, including inverted firing, firing with the pots resting one on top of the other, or firing with the pot partly covered by fuel or ash. It is not possible to determine which method was used, or whether all may not have been resorted to.

Of the B3 wares a high proportion was fired entirely under oxidizing conditions, and are therefore entirely red. A smaller number is red-and-black, and a still smaller number appears to have been entirely black. This appears to be little more than a shift of emphasis due to a change of fashion in the Post-Neolithic and Pre-Medieval periods. In the former a small number of all red or all black vessels do occur. Whilst at the close of the latter period, there seems to have been a turn towards the black finish, perhaps a sign of the influence of D wares.²³.

Results of Firing. The frequent occurrence of 'black core' has been noticed and a cause suggested. A more common

result of firing is "crackle", referred to in the Arikamedu report as "salt glazing".²⁴ Microscopic examination of a very large number of B1, 2 and 3 ware sherds has revealed that crackle is present in some degree on almost every one. The crackle is generally more pronounced in larger vessels and less pronounced in the B1 wares and in smaller vessels. It seems quite certain that the effect was not intentional and that the explanation given in the Arikamedu report is incorrect. The exact cause of this feature has yet to be determined. Blotchiness on red portions is obviously due to carboniferous deposits from smoke in the kiln. It occurs mainly on the bases of larger vessels (Groups IV etc.), but it is noteworthy how seldom it does occur. An apparent result of firing which is peculiar to the B2 wares is that the white paint and the overslip have flaked off, leaving a pinkish discolouration on the surface. A typical example is No. 36.2.

C. (Imported) Wares

Under this heading were grouped wares whose origin was probably outside the district, and which it is thought probable were introduced as luxury items into Raichur. As the finds of these wares are very limited we do not propose to enter into any detailed analysis of their technology even if such an analysis were possible. Brief notes on the morphology, distribution and dating of these wares will be included in a subsequent section.

Cl. The so-called Northern Black Polished (N.B.P) ware.

No specimens were found by the writer in the course of explorations in the district. Several sherds were, however, found as surface finds at Brahmagiri by Seshari. The specimens conformed in every feature with examples from the Ganges valley. As a great deal of imprecision surrounds the ware it is perhaps justifiable to mention the salient features. The body clay, which to visual inspection closely resembles that of the Painted Grey ware of Kuru pradesa, is very finely particled and was probably washed. The vessels were wheel thrown and many bear traces of turning to control body thickness. The surface was treated before firing with a thin dressing, of an unknown substance. Some specimens were further treated to give the effect of an orangey-red paint, although this appears to be more properly a black paint on red: the red being the undressed and the black the dressed surface. The firing is considerably higher than that of any wares native to Raichur, and must have demanded a more advanced type of enclosed kiln. The sherds have a high metallic ring when struck. The dressing when thus fired assumes a glossy lustrous appearance and a colour range from greenish-brown and mottled effects to grey, black and a high gold and silver metallic lustre. The 'paint' remains an orangey-red. There is clear evidence that the ware was not polished as some specimens retain finger impressions from the time when the dressing was still wet. The very high lustre of the specimens examined

and complete absence of anything approaching crackle makes it seem appropriate to refer to the surface finish as a body-glaze, and makes it imperative to find some new term for the ware. For the sake of convenience, however, we have here adopted the established, if misleading term.

The kiln needed to produce this ware marks an essentially 'new' technique when compared with the A and B wares. It appears, however, that a similar kiln was used for the so-called 'grey painted ware' of Hastinapur etc.

C2. Rouletted Ware. Only 5 sherds occurred in Raichur (all from Kopbal) which are probably imports to the district. Of these, two (36.15 and 36.15A) appear to be identical in ware to fine B3, the body clay being of evenly small particles yet they both bear rouletted decorations. Three other sherds (Nos. 36.14, 36.15B and 36.12) are sufficiently distinct from the general B wares to be included in this group. No. 36.14 is a rim of a typical bowl, No. 36.15B is a sherd, part of the base of such a bowl, and No. 36.12 a rim. The body clay of these three specimens is extremely fine and was probably washed in preparation. The two rims were wheel thrown but show distinct traces of turning to reduce body weight (a feature that they share with bowls of identical form of "N.B.P" and "Painted Grey ware"). All three have been treated with slip or dressing. The firing is higher than the average for the district, although not so high as for C1 ware. The body clay turned pinky-grey under oxidising conditions and grey under reducing. The dressing of

No. 36.12 has turned a reddish-brown whilst the body has turned pinky brown. The two remaining sherds exhibit a novel feature. The dressing of 36.15B has turned black on the inside and the body clay, evidently reduced, is a pale pinkish-grey, whilst the outer surface has been oxidized and the body clay is a brownish-pink. The dressing that remains on the outer surface is a dark brown-black. No. 36.14 has a grey reduced body and inner brownish-grey dressing, whilst the outer dressing is a greenish brown near the rim, and orangey-red in the tip of the sherd further from the rim. A further superficial resemblance between these sherds and the C1 wares is the tendency for the dressing to form tiny blisters and flake off. The presence of rouletted impression on the B3 ware must indicate Indian manufacture, whilst the close resemblance to the C1 wares seems to indicate a similar thing.

The kiln employed in the manufacture of this ware was probably similar to that used in the C1 ware. As such it marks an essentially foreign type of ware for Raichur district.

C3. Red Polished Ware. The third luxury import to the Raichur area has been found at Kopbal and Maski, and also at Kallur and Piklihal: all except the Maski finds were from surface collection. The ware has recently gained prominence by the spectacular finds at Kondapur. It has further been commented on at Chandravalli and Brahmagiri,

and finally an exhaustive summary of our knowledge to date has been given by Subba Rao (see above p. 99 , p. 106 , and below p. 325g).

The ware is distinguished from all others (except perhaps the C1) and particularly from the local Raichur wares by the extremely fine levigation of the clay. This either approaches a Kaolin primary deposit, or must have resulted from very careful washing. At Kondapur, where great quantities of vessels of the ware were found, I was informed that a source for the clay occurred within a few miles of the site. I did not, unfortunately, have an opportunity of verifying the statement or of making the potentially interesting explorations that the source of the clay would demand. The two forms that occur in Raichur require entirely new methods of shaping. Unfortunately only incomplete specimens of one form are available for study, and the other must rely on notes made by the writer in the Kondapur Museum, as no specimens are available for study in London. The necked "sprinklers", or perhaps^P wine vessels, seem to have been made in two parts. The necks were made in one of two ways, either rolled round a stick or wheel thrown. A straw or string ran through the body of the neck to provide an air hole in the case of the stick-rolled specimens, although this was not always done. At the base of the neck the clay was then drawn out to reach the shoulder of the lower part which was thrown separately and luted on. It is possible that a closer

study of a wider range of specimens, and of larger fragments would reveal further details of this practise. The finished products appear to have been turned to give regularity of form, and provide the graceful outlines that characterise the ware. They were then treated with coats of slip or dressing and probably polished with oil on the wheel. The firing demanded very exact control of temperature and oxidization. It again appears to have demanded a more advanced type of smoke-free kiln than that employed for the A or B wares, and as such, marks a distinct technique when it is found in Raichur. In an oxidizing atmosphere the body fired a light brick red whilst the surface became a 'Samian' red. In Raichur local imitations of this ware were made in red or brown B3 ware (for example 36.33, 47.59 and 47.60). In these latter a small hole was pierced at the base of the neck on the upper part of the body to take the place of the air hole in the neck.

The second type which, at Kondapur, distinguishes the C3 ware is a shallow bowl or cup. It is to be regretted that up till now no drawings of the type have been published and that in the absence of specimens for study in London the writer has had to draw upon his field-notes to complete their description. The cups are of similar body-clay and vary in form between shallow (about $1\frac{1}{2}$ " high) and deep (up to 4" high). The diameter is about 4"-6". The shaping of at least some specimens appears to have been by the press-mould process, the plastic clay having been pressed

into a mould. The ornamentation of the body included gadroons and herring-bone patterns in low relief. After shaping some specimens were treated with a slip similar to the "sprinkler" types whilst others were left unslipped. After firing the slipped specimens assumed a glossy red, resembling Samian Ware in hue and texture, whilst the unslipped specimens took on a whitish or creamy colour. The novel manufacture of these vessels, with its obvious links with the Hellenistic and Antiochene wares, makes them worthy of special attention in the future.

D (Medieval) Wares.

This section is based upon a comparatively small number of sherds studied. Comparison of the range of forms collected with those of the B wares, reveals a marked reduction. This feature could have been made even more clear by wider collection of the continually repeating forms, but the technology of the D wares is extraordinarily unvarying, and (superficially at least) links directly with the modern potter's technique. The comparative study of the modern wares of Raichur, and indeed the whole of India, is a rich field of research and one that deserves wider attention than it has so far received, and calls for a return to the pioneer work of Holder and others.²⁵ The writer's aim, both in this section and in the later study of the forms of the D wares, has been to attempt the delineation of the broad outline of the sequence of wares of the district,

and from this view-point the D wares form an essential unit. It must, however, be remembered that the period of time covered by these pages is probably more than 700 years and from this view-point it is highly desirable that later workers should attempt to sub-divide and check the generalized conclusions against the abundant cross-references that history can provide for field workers.

- a) Body Clay. The slight coarsening of granular size of the refractory content of the body, noticed in the B wares continues unbroken into the D.
- b) Shaping. The vessels are all wheel thrown, often with rounded bottoms. The only exceptions are the large hand-made storage jars and jars for industrial purposes already noticed. These continue in this period much as in the previous. There, is anything, a tendency towards slightly lighter bodies in the corresponding D and B3 forms, and the D/14 forms are probably shaped by a similar process to the B1 Group V forms. The beating process must have continued in use in the shaping of rounded jars etc.
- c) Surface Treatment. The surface was as a rule left as it came from the wheel, but a certain number of vessels appear to have been treated with a slip made apparently from the same clay as the body. Burnishing was not employed not were there any painted sherds among those examined. The few decorated vessels found were mostly of D/14 form. The decoration took the form of incised lines and notches.

(Comparable techniques are common at Kolhapur in Bahmani wares.^{26.}) A new feature found in D wares for the first time, but also present in Sātavāhana period B ware sherds from Maski, was the stamping usually of little rosette patterns on D/14 form pots. The finger-tip impressed decoration continued on the large hand-made vessels.

d) Firing. The firing was slightly higher than the average firing of the B wares. The body clays vary within a narrow range of brownish-orange and grey, whilst the surface colour varies between buff and grey. The kiln appears to have been a simple bonfire type.

II. Morphology.

A. Neolithic A Wares. (Pl. 85).

a) Functional. A study of the range of forms found in the district suggests their possible functions. It is also possible to draw general functional comparison with the other wares of the district.

1. Form A/1 a-g. Wide shallow bowls, 14"-16" diameter of about 4"-6" depth. ? Milk bowls. Compare forms B/249, B/31, B/32.

2. Form A/1 h-k. Open bowls, 6"-8" diameter. Probably food platters. Compare B/3, B/1, D/d, D/5.

Form A/3. Similar bowls with sharply cut rims. Compare B/6.

3. Form A/2. Small bowls, 4"-5" diameter. Probably food

bowls or cups. Compare B/5, B/11, B/12, B/13.

4. Forms A/4. Bowls with incurved rims of about 6" diameter. Food bowls. Compare B/1, B/3, B/6.

5. Form A/5. Incurved or carinated bowls with out-turned rims, diameter 6"-8" and depth 2"-4". Cooking vessels. Compare B/21, B/22, B/25, B/26.

6. Form A/7. High necked ? round bellied, vessels. ? Water pots and burial urns.

7. Form A/8, A/9. Broad mouthed, ? round bellied or near carinated, jars. Storage jars and burial urns; ? large cooking vessels.

8. Form A/10. Wide incurved bowl with spout. Diameter about 18". Milk storage.

9. Form A/11. Tall jars, with out-turned rims. Diameter about 6", height about 8". Found in burial, but possibly used as milking jar.

10. Form A/12. Narrow necked, round bellied, spouted vessels. Found in burial, but probably water pots.

11. Perforated vessels in coarse ware. Possibly for steaming vegetables or burning incense.

12. Forms A/14, A/15. Hollow stands with horn-like feet. Probably for holding bowls of form A/3. Compare B/95, B/96, B/98, B/99.

13. Form A/16. Disc lid with central knob.

b) Comparative.COMPARATIVE MORPHOLOGYA. WARE.

Raichur Form No.	B.G.	S.K.	Raichur B.Ware Form.	Naiyar's Corpus.	Arikame (C)
A/1a	T.33	-	-	A.3.	
A/1d, h.	T.64,66,63, 67.	XV	B.32	B.1	13
A/2	T.36a, T.64b		B.4	B.12	1
A/3	T.69		B.6		
A/4	T.62		B.12		3
A/5			B.22,25		23
A/6					
A/7	T.51. T.53.	XIX		G.17	
A/8	T.29	VII	B.33	G.34	35
A/9	T.25. T.27	VII	B.34		47.20
A/10					
A/11					
A/12	T.46				
A/13	T.76	X			
A/14					
A/15					
A/16		VIII			

In this table, B.G. stands for the report of excavations at Brahmagiri,²⁷ S.K. for those at Sanganakallu,²⁸ Raichur B ware refers to the forms given in Pls. 86-89, Naiyar's Corpus to the forms included in South Indian Pottery,²⁹ and Arikamedu (C) to excavations at Arikamedu³⁰ carried out by Casal. The references given are not intended to be in each case actual confrontations, but rather similitudes. In this and the following tables the aim has been to show

the total number of comparisons, but it must be cautioned that in some cases (e.g., B.G. in this table) the excavator's numbering is not according to numbers of variants of forms, and thus it is very hard to derive any statistic from the analysis.

Comparison of the examples quoted reveals a close resemblance of all key-forms between B.G. and Raichur. It reveals a similar resemblance with S.K. More surprising is the fact that nearly all the types which appear at B.G. and S.K. re-occur in the Bl ware in Raichur and in the 'Megalithic' ware Arikamedu(C). This persistence of forms, particularly at Arikamedu is both striking and suggestive. Based on the presence of at least one parallel in each of the functional subdivisions, 9 out of 14 are found at B.G. - (60%) about 7 are found in the Arikamedu (C) and Raichur District Bl wares respectively (50%). At Sanganakallu a somewhat lower figure can be accounted for by the limited scope of the excavation.

B.1. Post-Neolithic Bl Wares.

a) Functional. Gp. I. (Pl. 86).

1. Form B/3. A bowl of 7"-8" diameter with slightly incurved walls and rounded base below definite angle. Food platters. (See Form A/1 h-k above).

2. Forms B/4, B/5. Bowls of 4"-6" diameter with rounded sides. Food bowls. (See form A/2).

Form B/9, B/10. Bowls of unknown use, probably

varieties of food bowls.

Form B/11. Tall-sided bowls of 4"-6" diameter and 2"-4" deep, and marked angle at base of walls: slightly rounded base. Food bowls.

Gp. II (Pl. 87).

3. Form B/14. Tall pointed cup 2 $\frac{3}{4}$ " diameter and 5" deep. Drinking cups; no equivalent in A ware.

4. Form B/15, B/16. Shallow cups with rounded bases, 4"-5" diameter. Drinking cups and possibly also small lids. No. equivalent in A. ware.

Gp. III.

5. Forms B/21, 22, 23 and 24. Shallow carinated cooking vessels with out-turned rims. 6", 8" and 10" diameter. For cooking purposes. (See form A/5).

Gp. V. (Pl. 88).

6. Forms B/35 - B/45. Various pots with narrowing necks used for holding water, oil and other liquids. Compare forms A/8 and 9, and B/46-B76 and D/9 - D/17.

Gp. VI. (Pl. 89).

7. Form B/77. Hollow conical lids, with flat tops.

Form B/78, B/79, B/80. Conical lids finished in knobs.

Form B/82. Similar lids to B/78 but with hollow cups on their upper surface.

Form B/83, B/91. Small saucer lids, of 3"-4" diameter. Could be used either inverted or as drawn, and could also

serve as saucer cups. (Compare B/16 above, and B/86, 87, 90, 91 and D/2 and d/3 below).

Gp. VII.

8. Forms B/95, 96. Ring stands.

B/97-9. Hollow footed cup or bowl forms.

Compare A/14, A/16.

b) Comparative.

COMPARATIVE MORPHOLOGY. BL WARE.

Raichur Form No.	Arikamedu (C)	Wheeler's Arikamedu (W)	B.G. (Megalithic)	S.K. Naiyar's Corpus.
I B/3		8	C.13. P.13	(? III) D4, D7.
B/4	1		T.86	A6.
B/5	3	9	T.85	IIIb A10.
B/9				
B/10	8		11, C8.	A6.
B/11			C1. T.82	A18.
II B/14				S3.
B/15	1 e.		T.83	
B/16	10			D16, C1
IIIB/21	18	25	T.92, P.19	(? II)
B/22	15	30 f		(? I)
B/23			T.95.	
B/24	14		T.103.104.	D19.
V B/33	23, 27		C20 e	G()22
B/34	47		6	
B/35	23		C20 d	
B/36				
B/37				

Raichur Form No.	Arikamedu (C)	Wheeler's Arikamedu (W)	B.G. (Megalithic)	S.K.	Naiyar's Corpus.
B/38	23				
B/39	32		C20,22	IV	G(a) 4
B/40	27c	42	C22		
B/41	27d				G(a) 28
B/42					
B/43					
B/44			a)P.21,b)C29 e)T.112	V	
B/45		50			
B/50	50c				
B/57	55				
B/59			T.125		
VI B/77	51		T.111,P5		U2.
B/78			(Compare P2)		N4, N14.
B/79	59				N12.
B/80					N14.
B/81					
B/82					N1.
B/83					
B/91		29	C11		
VII B/95					T4.
B/96	62				L29,L30
B/97					
B/98					L15
B/99					

References: As above. Arikamedu (W) refers to Wheeler's excavations.³¹.

The result of this analysis is to show that about half of the forms noticed in Raichur Bl ware can be paralleled at B.G, Arikamedu (C), or in Naiyar's Corpus. The far

smaller number of parallels at Arikamedu (W) should be noticed. Based on the presence of at least one parallel in each of the functional sub-divisions, 9 out of 14 forms are found at B.G. - (60%), 8 at Arikamedu (C) -(57%) and no less than 12 in Naiyar's Corpus - (85%)

B.2. Pre-Medieval A & B (Bl,2,3, and 4 Wares).

a) Functional. Gp I. (Pl.86).

1. Form B/1 a-h. Flat bottomed bowls, 6"-10" in diameter, sometimes with roulette. Food platters. (New form).
2. Forms B/1 g-k, B/2, and B/6, B/3. Various shallow bowls of 6"-8" diameter, with rounded bases. Food bowls. (Compare B/3).
3. Forms B/4, B/7, B/8. Miscellaneous food bowls. Diameters 4"-6". (Compare Bl/5,4 etc.)
4. Forms B/12, B/13. Deep bowls with flat base and curved sides. 3"-6" diameter and 2"-4" height. (Compare Bl/1 Food bowls.

Gp.II (Pl.87)

5. Forms B/16, B/17. Small cups with rounded base (See Bl/16).

Form B/18. Open conical cups with flat pinched base. (New form).

Form B/19. Incurved cup.

These forms are all drinking cups.

6. Form B/20. Saucer lamp.

Gp. III.

7. Form B/25 Cooking pots with carination and everted rim. 9"-11" diameter, and c.4" deep.

Form B/26. Similar pots but with sharper carination and deeper rim.

8. Form B/27, B/28. Smaller cooking pots, 7"-8" diameter. (Compare B/21, B/22, B/23 and A/5).

Gp. IV.

9. Forms B/29, B/30, B/31, B/32. Deep bowls for the storage of milk or other liquids. Diameter of larger size 12"-16", smaller size 6"-8". (Compare A31).

Gp. V.(Pl. 88).

10. Forms B/46-B/76. Necked pots for the storage of water.

Gp. VI. (Pl. 89).

11. Forms B/84. Heavy platter lids, c.12" diameter, probably for heavy storage jars.

12. Form B/90, B/91. Flanged lids with rounded base, 5"-8" diameter. Could be used either inverted or as drawn.

13. Form B/83, B/85, B/86, B/88; Miscellaneous saucer and bowl shape lids.

14. Form B/89, 93 and 94. High, domed, stopper lids.

15. Form B/92. Saucer lids with inturned and decorated rims

GP. VIII.

16. Forms B/100-103. Heavy open storage jars.

17. Form B/104. Large ? tanning vats.

18. Forms B/105-106. Necked storage jars.

Gp. IX.

19. Forms B/107, B/108, B/109. "Mrid-angam" ? Earthenware drums, probably all single ended. New form.

20. Form B/120. Crucibles.

b) Comparative.COMPARATIVE MORPHOLOGY, B1,2,3,4,AND 5, WARES.

Raichur Form No.	B.G.	Ch.	Arikamedu (W)	Kolhapur	Baroda	Taxila
I. B/1a	Tl29	V	1			
B/1c	Tl41	A15	2	(? 17)		(? 95)
B/1k			7			
B/2						
B/3	Tl36	A9	8	18		(? 96)
B/4		M6A	9r			
B/6	Tl37	A6				
B/7	C3A, Tl61					
B/8						
B/12a	Tl31	A3	(?9)			
B/12e	Tl55	A26				
B/13a		A2				
B/13h	Tl59					
II B/16a	Tl49		8hii			
B/16b	Tl51		13f			
B/17			14			
B/18a			12a	68	62	101
B/18d		A22	12	52	8	100
B/18e		A21			8c	
B/19		(?A23)				
B/20						

Raichur Form No.	B.G.	Ch.	Arikamedu (W)	Kolhapur	Baroda Taxil
III B/25	T92	A37	25		
B/26	T177	A46	24	37	
B/27	T200		92		
B/28					
IV B/29a		A39			
B/29c			92		
B/29j					
B/30a					
B/30c		A35			
B/31			87		
B/32					
V B/39	T195	A68	43f		
B/40		A5			
B/45	T190	A72 A47	48		
B/46			42		
B/47					
B/48	C27, P15	A63	43j		
B/49		A49	43		
B/50	P17				
B/51					
B/52					
B/53		A67	45		
B/54					
B/55		(Compare A59)	144		
B/56a	T199				
B/56b		A61	69		
B/56c	T191				
B/57	T194	A64	69f		
B/58	T179	A60	44c		
B/59a	T125	M14	51a		
B/59b	T196	M15	53		
B/60	P18	A73			

Raichur Form No.	B.G.	Ch.	Arikamedu (W)	Kolhapur	Bar.	Taxil
B/61						
B/62						
B/63						
B/64			122a			
B/65			122			
B/66			111			
B/67	T189	A48	24v.			
B/68			61			
B/69a						
B/69e		A75				
B/70						
B/71						
B/72		A70				
B/73						
B/74			24			
B/75						
B/76			125			
VI B/83		A44	31			
B/84			34			
B/85						
B/86		A36				
B/87		(A36)		59		
B/88						
B/89					(39)	(197)
B/90a	T162	A40	29			
B/90g			28			
B/91	C11	A41	30	59		
B/92a						
B/92d						
B/93						(Fig.21 11a)
B/94						
VIIIB/100		A71	83a			
B/101						
B/102				93		

	Raichur Form No.	B.G.	Ch.	Arikamedu (W).	Kohl.	Baroda	Taxila
	B/103			84b			
	B/104						
	B/105						
	B/106		A69	AK 78			
	B/107(See Kondapur, above p.107)					
	B/108			135			
	B/109			134			
IX	B/115						
	B/116				Fig.22 14		
	B/117						
	B/118			143			
	B/120						

References as above. CH stands for Chandravalli,³²
Kolhapur,³³ Baroda,³⁴ Taxila.³⁵

Comparison of the forms with BG, Ch. and Arikamedu W., reveals again a surprising uniformity. In contrast to this the comparison with Kolhapur, Baroda and Taxila reveals the presence of very few forms (excepting certain All-India types) in common. Based on the presence of at least one parallel in each one of the functional sub-divisions, 10 out of 22 are found at Brahmagiri (47%), 15 at Ch (68%) and 16 at Arikamedu (W) (73%).

C. Intrusive (C) Wares.

a) Functional 1. Cl Ware (N.B.P).

In the Ganges Valley sites two main forms occur in this ware - a shallow flat bowl (Compare B/1) and a smaller deeper bowl, sometimes round-bottomed (Compare B/12). These two forms appear to be food bowls. The B/1 form may be compared to the modern "thali".³⁶

2. C2 Ware (Rouletted).

At Arikamedu the main form (which has occurred at many other sites) is a shallow, flat bowl (B/1). ³⁷. Casal recognized two further forms as being in the ware which he supposed was imported. The one was a footed bowl, and the other a smaller bowl of "tronconique" form with stamped designs on the inner surface. The former corresponds to Wheeler's types 17 and 18, of 5"-6" diameter, the other to Wheeler's 10 with a similar diameter. Both appear to be food bowls. ³⁸.

3. C3. Red Polished Ware.

Apart from the forms recorded by Subba Rao in Baroda, ³⁹. the only two types so far recognized in the Deccan are the "sprinkler" (Raichur form B/111) of which a local B3 ware form also exists (B/110), and the Kondapur cup and bowl types (of which no drawings are yet published) which have not yet been found in Raichur. The local varieties preserve the air vent at the base of the neck, even when the internal diameter of such necks was over half an inch. In some varieties the air hole in the neck seems to have been replaced by a small ~~spot~~-like projection on the shoulder of the vessel. The survival of this necked type at Buddhist sites and in the Ganges Valley for several centuries perhaps indicates its association with lustration, but its occurrence at Kondapur and Kolhapur beside the cup form makes its association with drinking either of water or of wine a

a tempting hypothesis.

A curious object from Maski appears to be in this ware and is of interest as demonstrating the late survival of its use for special purposes. 47.64 is an ornate (?) tobacco (?) ganjam, pipe from Maski. 47.65 is another pipe of schist from a similar provenance. These two objects probably date from the Medieval period. 47.65 is closely similar in size and form to two pottery ?(pipes) from Kohlapur Brahmani period.⁴⁰ A further pottery pipe of uncertain date came from the excavations at Paithan and is in the Hyderabad Museum.

b) Comparative.

1. C.1₂ wares. The tray bowl and deeper bowl forms of this ware compare closely with the two corresponding forms in the Painted Grey ware. The tray bowl also appears identical with examples in 'Rouletted' ware and B3 ware. The deeper bowl form of the C2 ware (Wheeler's form 17 and 18 at Arikamedu) is footed and ribbed with a distinctive overhanging rim. It compares closely with specimens of similar size from Sirkap,⁴¹ and to fragments from Sisupalgarh (said to be in Black and Red ware.⁴²

2. C.3 Ware. The moulded bowl demands comparison with the Hellenistic moulded bowl of black, brown and red wares.⁴³ The basal rosette is a common decoration. This type lingered into the early centuries A.D. at Antioch on the Orontes.⁴⁴ It is not easy to find the prototypes of the sprinkler, but

it seems possible that comparisons may be found among late Hellenistic Lagynoi. In India, however, the form seems related to the specimen from Taxila, Bhir Mound, already mentioned (above p. 578). The absence of detailed study of the late Hellenistic wares and their Roman counterparts of the Levant makes further comparison difficult.

D. Medieval (D) Ware. (Pl. 90).

a) Functional.

1. Form D/1. Shallow carinated bowls. 5"-8" diameter.
? Food bowls.

2. Forms D/2, 3. Shallow bowls with inturned rim. 5"-10" diameter. Food bowls, and covers for water pots etc.

Form D/4,5. Shallow bowls, ? either for food or covers etc.

3. Form D/6. Bowls with inturned rim. ? Food bowls.

4. Form D/7. Conical cups, compare B/18. Drinking cups.

5. Form D/8. Deep bowls with inturned rim. Diameter 8"-10"
? For cooking.

6. Forms D/9-D/17. Spherical bellied water pots. (Compare B wares Group V).

7. Form D/18. Tall conical lid with flat inturned base.

8. Form D/19, 20. Coarse storage jars, tanning vats, etc.

b) Comparative.

(See table over page).

COMPARATIVE MORPHOLOGY D. WARE.

Raichur.	Raichur B. Ware.	Kolhapur	Baroda	Other Sites.
D/1, a,c.	B/4d	4		
D/2		5	88	
D/3				Chandravalli A36.
D/4		2		
D/5			125	
D/6				
D/7	B/18	60		
D/8		67		
D/9	(B/59)			
D/10				
D/11	B/53			
D/12	(B/60)			
D/13				
D/14	B/55			
D/15	(B/51)			
D/16				
D/17	(B/70)			
D/18				
D/19				
D/20	(B/101)			Arikamedu 145

The material available for comparative study is very limited, but it appears that, based upon the functional divisions made above, 4 out of 8 forms occur in the Raichur B wares (i.e. 50%), and 5 at Kohlapur (i.e., 62%). The main resemblances at the latter site are from the Bahmani period.

III. The Terracottas: Technology and Morphology.

A number of terracottas has been found in the district. As the body clay and firing processes of these objects are closely related to those of the pottery it is convenient to study them in their relationship to the wares already examined.

A. Neolithic (A Ware) Terracottas.

All the examples of these terracottas appear to be hand modelled. They are all in unburnished A1 or A3 ware. They may be divided into two groups. The first includes the two specimens from Piklihal (Pl. 94 Nos. 1 & 2) which can be assigned to Neolithic A, and a single fragment from Maski (Pl. 94 No.3). They are in red slipped A3 ware and appear to represent humped bulls, and humpless cattle. One specimen has slight incised marks suggesting eyes. The modelling is simple but effective. The head is stylised whilst the horns are exaggeratedly large. The second group comprises surface finds from Maski, Piklihal and Billamrayan Gudda. The ware in all cases is A1 and the cruder, less graceful modelling of some specimens (Nos. 4 and 8 of Pl.94), together with the attempt at separate treatment of the legs in three cases (Nos. 4,8 and 6) suggests a degeneration of the earlier specimens and may be assigned to Neolithic B. No. 7 represents a bird, possibly a fowl. Two other examples of this group were human male torsos found as surface finds at Piklihal. They were not available for subsequent study. Another surface find from Piklihal represented the snout of

some animal (apparently a horse) with incised marks for nostrils and incised outline eyes. The ware is probably A1, but the modelling seems to be according to a different formula from the other specimens. It is perhaps Post-Neolithic.

All these specimens are comparatively small, none having a body thickness of more than $1\frac{1}{2}$ ". One other surface find from Piklihal was a fragment of a much larger object. The shape suggests that it might have formed part of the fore shoulder of a bull with body diameter of 3"-4".

These terracottas are comparable with the specimens illustrated by Wheeler at Brahmagiri.⁴⁵ A number of objects from the Foote collection are clearly related: No. 834 from Kupgal, Bellary, appears to be one of the second group, the legs treated separately and the tail incised in characteristic fashion.

B. Pre-Medieval (B Ware) Terracottas.

B1 and 3 Ware. A small number of figures both human and animal were noticed in these wares: nearly all specimens are from Maski. 47.89 is the head and trunk of an elephant in red B3 ware. It appears to be hand modelled. Other specimens in the Maski Museum included black burnished (B1) figurines.

B4. Ware. The unslipped terracottas fall into several distinct groups. From Maski comes a head of a typical

classical type and beyond doubt moulded. Other more crude examples are hand modelled; these include the crude heads with conical caps and long ears found by Munn at Karatgi. A number of these figures appears to have been painted with a lime wash and ochre painting after firing. Several animals are found including the buffalo and lion. The lion seems to have been popular as specimens occur at both Piklihal and Maski. The moulded examples were all pressed into a single mould, and hand finished at the rear.

Terracottas of B ware in the Maski Museum exhibit a common use of lime and ochre paints. The lime was used for whitening the clothing of some specimens, leaving the flesh a natural red. The ochre was employed to outline the eyes, headdress, brows and features of clothing.

C. C Ware Terracottas.

1. C1 (N.B.P.) No specimens occur in the district but for purposes of comparison it is interesting to note that human and animal terracottas occur in both C1 and C1 painted ware. The painting includes red, pink and cream patches. Typical elephants were found at Bhita,⁴⁶ whilst other specimens have recently been found at Kausāmbī. Stamping of rosettes upon the leather hard figure seems to have been a common ornament.
2. C3 Ware. At Kopbal the foot of a hollow double moulded figure in this ware was found. At Kondapur human and animal figures occur in large numbers in both slipped and unslipped

varieties (see above p.106). Many close~~n~~ similitudes were found in the Maski excavations. These all demonstrate a double mould technique. The two halves were press moulded and finally luted together before firing.

CHAPTER V: NOTES AND REFERENCES

1. Subba Rao, loc. cit. 1948 Pl. VIII.
2. Aiyappan, A. Man 1947-8, No. 54.
3. Subba Rao, loc. cit., 1948. Pl. VIII.
4. A.I.4. T.74 pp.231-2.
5. See I.P.P.A. pp23-4, for notice of sites in Bellary where earthy red haematite was found. A further possible use for this material would be in rock-painting.
6. A.I. 4, p.222.
7. ibid. Fig. 17, 12 and No. 12. p.222.
8. Subba Rao, loc. cit. 1948 p.15 - Pl. VII.
9. I.P.P.A. No. 387.6.
10. Aiyappan, A. Man, 1939. No. 65 discusses possible links with the Indus Valley Civilization for modern Tamil perforated pots "with a thousand eyes" used for burning camphor etc.
11. Rosenthal, E. Pottery and Ceramics, pp. 67-8.
12. A.I.2. pp.51-2.
13. Dumont, L. Man 1952. No. 121.
14. A.I.2. pp.94-5.
15. Jagor. Verhandlungen der Berliner Gesellschaft fur Anthropologie, 1878, p.228 ff.
16. Dumont, loc. cit. 1952.
17. A.I.4. p.300.
18. Holder, J.I.A.I. VII,
19. Naiyar, T.B. Studies in S. Indian Pottery, pp.51-2.
20. A.I.2. Pl. XXXI C.1.
21. Hunt, E.H. J.R.A.I. 1924 pp.150-2.

22. Sankalia and Dikshit, loc. cit. p.58, and figure facing p58 Nos. 1 and 18.
23. The question of firing is more fully discussed by Naiyar, loc. cit. pp. 54-9, who realised that the red and black colours were produced by firing conditions. Much confusion would have been avoided in subsequent writing if this fact had been more widely appreciated.
24. A.I. 2, pp.93-4.
25. J.I.A.I.
26. Sankalia and Dikshit, loc. cit. p.56.
27. A.I.4.
28. Subba Rao, loc. cit. 1948.
29. Naiyar, J.B. loc. cit.
30. Casal, loc. cit.
31. A.I.2.
32. A.I.4.
33. Sankalia and Dikshit, loc. cit.
34. Subba Rao, loc. cit. 1953.
35. Marshall, loc. cit. 1951.
36. Several examples are illustrated by Wheeler in A.I. 1. p. 56.
37. A.I.2.
38. Casal, loc. cit. p.37.
39. Subba Rao, loc. cit. 1953 pp. 56-62.
40. Sankalia and Dikshit, loc. cit. p.89, and fig.22, Nos. 12 and 14.
41. Marshall, Taxila, Pl. 124 types 105 and 106.
42. Lal, A.I.5. p.85 Nos. 2 and 10.
43. Thomson, H.A. Athenian Agora, Hesperia III. 1934.

- 44. Waage, F.O. Antioch on the Orontes IV Pt. 1. pp.29-3
- 45. A.I.4.
- 46. A.R.A.S.I. 1910-11.

V O L I I .

T H E E A R L Y C U L T U R E S
O F R A I C H U R D I S T R I C T .

C H A P T E R V I .

T H E E A R L Y H I S T O R Y O F T H E P E N I N S U L A I N
T H E L I G H T O F A R C H A E O L O G Y

CHAPTER VI.

THE EARLY HISTORY OF THE PENINSULA IN THE LIGHT OF ARCHAEOLOGY

Many recent additions to our information on the archaeology of the peninsula make a new analysis of archaeological, literary and historical evidence desirable. Recent contributions, whilst moving in this direction, have often lacked all sense of the dynamic speed with which cultural change appeared in the peninsula. Thus one writer concluded a survey of the subject with the contention that the use of iron was a south Indian discovery and spread thence to Crete and Greece. Another writer has sought to show that the five divisions of occupation mentioned in the early Tamil texts (the Villavar, hunters; Minavar, fishers; Maravar, fighters; Ayar, pastoralists; and Ulavar, agriculturalists)^{are} contemporary signs of an intelligent grasp of the evolution of human culture. They appear to us to be rather a graphic description of the occupational divisions which the authors saw in their own day.

Archaeological evidence suggests that from late Palaeolithic times the peninsula was occupied by two groups of tribes both using microliths. The first group (whose tools are typologically distinct) appears to have spread

throughout the Deccan Plateau. Possibly related to this culture are the finds reported by Gordon from the Mahadeo hills.^{1.} The second group appears to have been littoral, and it is possible that they represent fishing tribes.^{2.} Their microliths have been found in Bombay and Gujerat. Possibly they are related to the littoral microliths of Sawyer-puram first noticed by Foote.^{3.} A third, distinct, culture has now been localised which may well represent a later addition to the earlier. It is impossible to state whether it indicates a migration or merely the spread of new techniques, or both. This culture is generally termed 'Neolithic'. It appears to have extended over the valleys of the Krishna and Tungabhadra rivers, and thence eastwards across the Deccan Plateau to the Eastern Ghats, and latterly southwards towards the Wynad. It now appears that the culture (below p 369f) was largely pastoral, although small scale cultivation and hunting were practised.

It is as yet impossible to say whether the finds of neoliths in the region south of the Ganges and in the N.W.F.P. were from cultures in any way related to the Deccan Neolithic. It is evident that a full fledged Neolithic culture of this type persisted in Raichur and the neighbouring districts into the first century A.D., (below p.541f) and there are many traces of its partial survival elsewhere

well into historical times (below p.397f). From stray finds of Neoliths reported, it seems probable that the Deccan Plateau culture had also penetrated to the Tamil Plain by about 500 B.C. (Below p.560f). Here the small scale terracing of fields seems to have developed into surface drainage tanks, and the cultivation of rice (which now grows wild in the area)^{4.} may have lead to a primarily agricultural economy. At present the indications are that rice cultivation spread southwards down the East Coast, and thus the earlier centre of cultivation in India was probably in the region of the Chilka lake.

Generally the stone basis of these varied economies would only be supplanted by metal when any one of them developed a more advanced social order, or came in contact with more advanced societies. It is a well known fact that many hunting tribes of modern India have taken to the use of iron in comparatively recent times, thus providing a basis for baniya trade. It seems probable that the microlithic industries in all these areas gave way to metal in the early historic period. This may be gauged from the occurrence of pottery at some sites, and of historical cultures in close stratigraphical relationship with the microliths (below p.397f).

It has been suggested that there was sea trade between the Tamil coasts and the western centres of civilization⁵ from the 7th century B.C. Of the Phoeniceans we are told⁶ that iron was in their market. In particular, it appears that after the exploits of Alexander, the attentions of Ptolemaic Egypt turned to the east. It seems, therefore, plausible that about this time (c.275 B.C.) the agricultural tribes of the Tamil coasts were supplied with iron tools in exchange for local commodities. Such a trade would be a close parallel to the later ~~Axumite~~ Axumite commerce with barbarous or savage tribes of the interior of Africa, and with the lengthy periods for which some modern tribes in Africa have been able to meet their needs in metal tools from outside trade, (p.545f).

Before turning to the historical development of these barbarian agriculturalists of the Tamil Plain and the civilization to which they gave birth, it will be convenient to consider the earliest references to them in the Northern, Aryan, texts, and the earliest traces of what is often called the Aryanization of the South.

Historians are now tending to agree that there is very little evidence for an early Aryan penetration of the south. It seems that in pre-Mauryan times the only Aryan tribes

south of the Narbada river were in Mūlaka and Asmaka

7. (Asvaka). Further, Aryan rule may have been established

8. in Kalinga. Of the early Andhras, it is now generally believed that they "originally lived in the Vindhyan region and in the northern part of the Deccan, and pushed gradually to the south in later times". 9. Sircar is of

the opinion that the Andhras were an Aryan tribe. He has pointed out that the telegu coast is first referred to as Andhrapatha in an inscription of the end of the

10. 3rd. century A.D.

It is in the light of these facts that the early references to S. India and Ceylon must be considered. Asokan edicts mention Colas, Pāndiyas, Satiyaputas, Keralaputas and the Tāmraparnis or "as far as Tāmraparnī".

The Grammarian Kātyāyana (c. 180 B.C.) mentions Codas and Pāndyas. The Taittirīya Āranyaka refers to a cerapadaśa that has been taken as indicating the Ceras. The 11. identification has, however, been disputed. Tāmraparnī

has been variously taken to mean Ceylon and a river in 12. S. India.

It seems probable that the Ceylon identification is correct. The Digvijaya parva of the Mahābhārata which Motilal has confidently dated c. 150 B.C., refers to 13. Pāndyas, Drāvidas, Codras, Kerlas.

The nature of Pre-Asokan contacts with Ceylon is at present a blank illumined only by the "interested fabrications of the monkish chronicler". The authority of Mahāvansa is surely open to the gravest of doubts in its claim that the triumphant journey of Vijaya coincided exactly with the year of the Mahā-Pari-nirvāna of the Buddha. The Asokan mention and that of Sabha^{14.} parva of Mahābhārata are the earliest solid references from the north.

There is probably every reason to accept the repeated traditions associating Asoka with Devānam Piya Tissa^{15.} and Mahendra's mission to Ceylon and S. India as containing a core of sound fact. But until further archaeological light can be shed upon the question of the pre-Asokan colonization, it seems only reasonable to conclude that the impulse which carried Mauryan power to Kalinga and Mysore also inspired it. There is further no clear evidence for an early use of the port Tāmrālipti (? Tamruk). However, bearing in mind the evidence for a southern extension by land of Aryan influence, it seems reasonable to assume that in the period immediately preceding Asoka there was coastal contact between that port and Ceylon, via the intermediate coastal towns. There is absolutely

no evidence for indigenous shipping until the periplus refers to the "ships of the country" which traded from Tāmilakam to the Ganges.^{16.} Nonetheless, the Asokan and other references quoted make it seem probable that the sea contact was the main link between the Ganges valley and the southern kingdoms.^{17.} This evidence coincides with that of the routes in the Deccan (below p. 518) which appear only to have been opened up in the first two centuries A.D. Ceylon remains an important focus for future archaeological research.

It can now be seen that the first stage in the 'Aryanisation' of the Tamil tribes may have occurred in the period 250-50 B.C. as the result of trading contacts and the visits of Buddhist missionaries. We have seen that the tribes consisted essentially of agriculturalists and pastoralists ethnically akin to the Neolithic tribes of the Deccan Plateau. There can be little doubt that both groups spoke varieties of Dravidian dialects, and that these were adopted also by the fishing and hunting tribes who came in contact with them. We can say very little of the tribes or their social systems. Siva Raja Pillai^{18.} clearly analysed the confederacy of settled agricultural village communities which preceded the three kingdoms and for the early existence of which there is

evidence in the texts.

It must have been into this setting that Aryan coastal traders and missionaries came. Probably the only material relic that can be safely ascribed to them is the open tray bowl which acquired, probably under the influence of Mediterranean trade, the rouletted decoration. The close technological relationship of this ware and the so-called Northern Black Polished, can be explained in no other way. On the other hand the evidence of Arikamedu suggests that the rouletted ware does not make an appearance there substantially before the influx of Roman objects, and this evidence makes a late date for the Aryan contact tempting: it also seems to favour a persistence of N.B.P. into the Christian era.

Before we cross the threshold of the civilization of the ancient Tamil kingdoms, we shall summarise the evidence for the nature of the southern expansion of the Mauryans. The text of the second Rock Edict leaves no doubt that the southerners are referred to as "borderers" (antas) as opposed to those within the domain (vijita), the beloved of the Gods. Both this fact and the enumeration of the other peoples within the imperial sway are

are consistent with the known distribution of the rock edicts. The Sopara and Girnar MRE's mark the end of the routes from the Ganges valley and the N.W. They appear to signify the stepping off place for overseas trade. The Dhauli and Jaugada MRE's lie in the heart of ancient Kalinga and mark the S.E. extent of the empire. The group of southern MRE's at Maski, Kopbal, Siddapura and Yerragudi quite clearly mark the southern extent of the Mauryan empire, presumably reached during the reign of Bindusāra.^{19.} It is tempting to enquire which routes were used by those who travelled to Mysore. Three possible routes exist. An East Coast route by sea or land to the mouth of the Krishna and thence west via the Nandikanama pass to Yerragudi; a western route via Vidisa, Mahismatī, Ajantā and Paithan to Maski and thence Isila, or a doubtful route via Rupnath to Tewar and thence south to the east coast. It is not possible to determine which of these routes were in use in Mauryan times, and it is to be hoped that exploration may supply some answer to this obviously important question (see P. 56⁶ and Pl. 5).

We may also raise the legitimate question of the motivation of Mauryan expansion to the W. Coast, Kalinga and the south. The first appears to be to gain direct contact with the Alexandrian, Hellenistic trade, and

possibly to control the movements of foreign settlers in the area of Surāst~~ma~~^{ma}. The second, may indicate the sea route to Ceylon and the south, but more certainly the capture of the rich rice fields of Orissa. The third expansion would control the gold deposits of Raichur; (gold is a product of the southern route and Hātaka in Kautilya). ²⁰

The last stages of Tamil prehistory may be conveniently dated from about 250 B.C.

At about 50 B.C., a further change took place in the nature of the Tamil tribes for which there appear to have been several contributory causes. Trade with the West had received an impetus from the campaign of Alexander. In the beginning of the 3rd century B.C., Ptolemy philadelphus had built Arsinoe, Bevenike and finally Myos Hormos on the western foci of the route to India. ^{21.} Further south in the Red Sea was Adulis, the port of Axum, with its inscription of Ptolemy Euergetes (c.240 B.C.) ^{22.} That a steady trade continued from this time onwards is certain. It accounts for the importance of the W. Coast ports to Asoka, and for the early wealth and prosperity attested by the monuments that lie along the routes. Nor was this sea route to Alexandria the only one to develop. Warmington has shown how the Persian Gulf was also used and contained such centres as Gerrha and Charax the terminals of well worn desert routes

to Petra and perhaps Syria.^{23.} The importance of this route and of the Persian land routes to India may be attributed to the period following Alexander's expeditions, and the long history of Roman - Parthian rivalry to control^{24.} the Persian Gulf is a factor that must not be overlooked.

The role of Southern Arabia and such ports as Muza^{25.} and Aden as entrepots is also indicated by our sources. In fact it appears that the early trade passed from Egyptian hands at the Red Sea ports and thence to middlemen whose^{26.} ships sailed for India. That the trade was thus indirect may account for the very few material traces now known. Hultzsch quotes a solitary coin of Ptolemy Soter (c.300 B.C.)^{27.} from Bangalore, whilst an Indian is mentioned in an inscription^{28.} between Edfu and Berenike. It is also possible that the middlemen left more direct traces of culture in India than the actual instigators of the trade. The similarity of grave types of S. India and Southern Arabia is mentioned below. (pp. 476 f) Until 50 B.C. the volume of this trade can at no time have been very great. That it then quite suddenly grew was the result of Roman power.

Some indication of the Roman trade may be had from an analysis of the coin finds in India. Warmington has shown that Republican coins are very rare and are found only in

the north-west. He attributed them to sea trade to the Indus ports, but there are indications of the land routes^{29.} having been of earlier importance than he allowed.

The earliest Roman coins found in the south are those of Augustus, and the same writer suggests that the trade would only really open up with the eastern mission of Gaius in 1 B.C. That it then was aimed mainly at the South may be inferred from the paucity of coins of the early emperors^{30.} in north India. In S. India the coins are at their greatest numbers between Augustus and Hadrian; after this there is a very marked decrease, and the coins only occur again (and then in much smaller quantities) under the Byzantine^{31.} emperors. We may thus conclude that the years 1 B.C. - 150 A.D., saw the Roman trade at its maximum.

What was the effect of this trade upon the Tamil land? In the first stage (up to 50 B.C.) it has been suggested (below p.549) that barter was found a suitable means of trading with the barbarous tribes. This barter probably included iron tools and weapons. The control of this trade and the ports at which it was conducted could have given rise to small autocratic states. It is probable that there were also colonies of traders already settled on the coast. Their distinctive features would be the iron tools they traded in and possibly the pottery they made or imported.

The objects they sought were probably then, as later, spices - particularly pepper. It seems quite certain that the next stage in their trade was the smelting of iron and the production of tools on Indian soil, and that with it, and perhaps with the originally imported craftsmen, who would be well rewarded for their services, came the custom of burial in stone-cists (apparently not known to the Neolithic agriculturalists). With the mastery of iron production the local autocrats could demand payment in coin from their overseas merchants. It appears that this was the condition at about 50 B.C.

Thus the first period (250 - 50 B.C.) must have seen the emergence of the Chola, Chera, Pāndya Kingdoms. This may be inferred from the Asokan edicts. This period includes the growing importance of iron in the economy of the tribes, and probably the rapid growth of population and the cultivation of rice. That other smaller tribal groups survived and were only finally eliminated in the succeeding (historical) period can be inferred from the earliest texts.

With the increase of trade and the advent of "Greek" colonies various distinct processes would occur. The local autocrats would proceed to fight one with the other competing for trade and to expand their areas of control,

whilst the iron craftsmen, finding more and more workable deposits, would set about expanding their markets. This is well attested by a number of facts and marks the second stage in the story.

An interesting corroboration of this hypothesis is the occurrence of "plated" coins of Augustus in South India. ^{32.} Warmington notes that this indicates probably that the natives "could not as yet distinguish good Roman coins from bad" - clearly an indication of the novelty of the type of currency.

The earliest Tamil literature appears to reflect the dynastic history of the Cholas, Pāndyas and Ceras from about 50 B.C. There is every probability that writing, which may have been known and used in the area for some time, now became more important as one of the factors in trade and government. The most satisfactory attempts at reconstructing ^{33.} the history of the dynasties are those of Sesha Aiyar and ^{34.} Siva Raja Pillai. The former based his chronology upon the so-called 'Gajabāhu synchronism', whilst the latter rejected the synchronism as too tenuous for so weighty a structure as Tamil chronology, and sought to base his own chronology upon the references to the Aayi Kingdom in Periplus and Ptolemy. His conclusion is fortified by the political, geographical and commercial indications of the early literature.

Both scholars reach, by their independent systems, a close agreement, and as the archaeological evidence of Arikamedu and the interpretation of the dating of the graves here made (below p 554f) support them, we propose to accept their general conclusions. Thus the early historic Cholas may be dated from about 50 B.C. to A.D. 200, and the historic Cheras and Pāndyas to roughly the same dates. Whilst it is possible to accept the dynastic chronology thus reached, great care must be exercised in accepting the material evidence provided, as the redaction and editing of the texts was almost certainly centuries later. Thus Pattupāttu mentions the iconographic form of Vishnu - Anantasayi, which occurs first in the North at Deogarh in the Gupta period and in the South is first represented at Mahabalipuram (7th century).
35.

The political evolution recorded in the texts is exactly that which our archaeological analysis reveals. Of the first five classes of tribes two, the pastoralists and the agriculturalists, achieved a state of tribal chieftanship (Ko or Vel). Finally the pastoralists, who are recorded as cultivating millet, fell under the sway of the rice-producing agriculturalists, whose domination of the coastal areas naturally lead to the subjugation of the fishers and the capturing of the sea trade. The texts re-

fer to "nine kings" and "seven crowns". These appear to be indications of a greater number of small kingdoms being reduced. The final stage of the process is clearly recorded in the texts. First the southern tip was unified under the three dynasties and smaller rulers eliminated (the Ay and the Neytalankānal tribes for example, by the Pāndyas and Cholas respectively). Next there comes the period of expansion. The Cheras, for instance, made conquests to the north into the Pulinnād and eastwards onto the Deccan Plateau and the Kongu nād. This period of expansion seems to have ended in intercine strife, and to have been followed by a period of relative inactivity.

We may note that the early Tamil texts make it quite clear that the source of their wealth and power is the overseas trade. We hear often of the colonies of Yavanas speaking many tongues and of their ships bearing gold and taking pepper. Thus of Cēramān Perum-Sorru Udiyan Cerālātan the poet sings: "Thy land with plenty smiles, with untold wealth the deep seas bosom yields, and treasures new that ceaseless to thy ports from foreign lands rich merchant vessels bring." It has been suggested from several indications of the texts that the native trade was mainly barter, whilst the overseas trade was carried on in the foreign currency. This is supported by the very limited finds of

early indigenous coinage in the South. For although hoards of punch-marked coins are reported, their probable date is set by the hoard which included a silver coin of Augustus, and analysis of other finds would probably yield a similar date. The texts also mention the coastal trade with the Ganges, although the information is not very extensive. This does, however, support the Periplus reference to 'ships of the country' trading along the east coast.

We may conclude that the second period of Aryanisation of the Tamil kingdoms was that of the early literature, when contacts of very sort were encouraged by the prosperity that Roman trade brought. We may also conclude that the graves of the Deccan, as well as the Tamil plain, are largely the result of the expansion of trade, particularly in iron, but doubtless also of the other trades of the 18 castes (Vellalars). The paths along which this expansion moved have been hinted at by the distribution of certain grave types (p.458^{p554},). It has been suggested above that the stone-cist graves may be associated with this movement, whilst it has been noticed that the piriform urn burials are mainly confined to the coastal regions (p.459). The significance of this is not clear, but possibly it indicates that the urn burial was the older practise of the agriculturalists, and the cist graves and their ramifications are the results of

the imported burials customs of the foreign traders or iron workers. Thus the historical scene supports the dating evidence supplied by the graves themselves (p.551 f), although the early dating of at least some of the graves of the Tamil plain is as yet indicated only by the occurrence of red-and-black ware in pre-Roman levels at Arikamedu (below p.561 f).

Apart from the Asokan edicts nothing is known of the history of the parts of the Deccan which fell for a time under Mauryan sway. Some historians have sought to fill the gap with an extended Andhra chronology, placing the founder of the Sātavāhana dynasty in an eponymous ruler whose reign is fixed from 235 - 220 B.C.⁴⁰. They support this early date with the Asokan reference to the Andhras, and the supposed account of their power recorded by Megasthenes. This reference, however, first occurs in Pliny (1st. century A.D.) and the earlier dating is mere hypothesis. Furthermore, it in no way establishes the Andhra occupation of the E. Coast at this early date, and the more generally accepted conclusion is that the Andhras were in Mauryan times (and even later) a tribe centred in the northern part of the Deccan (above p.340). In this position, they would have been naturally the masters of any trade contact between the W. Coast ports and the Ganges valley, and probably held this position from Mauryan times until the rivalry of the

Ksatrapas challenged it. It is probable that the first ruler of the dynasty, Simuka, may be assigned to about 30 B.C.^{42.} or at earliest 73 B.C. This date is reinforced by its general coincidence with the rise of the Tamil kingdoms. This does not preclude the existence of an Andhra tribe, and of tribal rulers, even before the foundation of the Satavahana dynasty. The controversy is one that can probably only be solved by an intelligent use of archaeological methods: an excavation at Jaggayyapeta or Amarāvati, properly conducted, could throw a flood of light on the early Andhra connections with the E. Coast, and possibly of pre-Mauryan and subsequent cultures. Until this work is complete the situation must remain fraught with uncertainty.

The dating of the early Sātavāhanas is closely linked with that of Khāravēla and the Hāthīgumphā inscription. We shall follow Gairola and Sircar and adopt the later dating. This demands a reorientation of the whole history and archaeology of the period and we shall attempt to sketch the central points.

If Khāravēla be assigned to the last quarter of the first century B.C., it is possible that the major defences of Sisupalgarh (Phase III), which were completed somewhere before the middle of the first century A.D., can be assigned^{43.} to approximately his times. The Hāthīgumphā inscription

states that in his second year, Khāravēla sent an army to the west, not caring for Sātakarni, and then going to
 44. Krisnavena he menaced the city of Rishika. This king is generally taken to be Sātakarni I and it seems clear that his kingdom lay to the west of Kalinga. Whether his rule had already expanded to the Andhra coast is not clear, and ^dindeed there is no clear evidence as to when the first Andhra extension to the east occurred. Early Andhra coins from the east suggest on epigraphic grounds close affinity to the Nasik and Nanaghat inscription of Krishna Rājā,
 45. father of Sātakarni, and it is only possible to suppose that it was during these two reigns that the Andhra power reached the E. Coast, at about the turn of the Christian era. Of the earlier rulers of the coastal region there is as yet no evidence. The vast numbers of neolithic artifacts discovered in the vicinity of Amarāvati suggest that there may have been a neolithic pastoral tribe in the area, perhaps comparable to those of Raichur. If so the development of culture in the coastal region may have been parallel to that of the Tamil plain, but more directly subjected to the Aryanizing influences of Kalinga. There is nothing known of the Rājā Kuberaka of the Bhattiprolu caskets, and indeed, the uncertainty that surrounds the coastal plain
 46. can only be resolved by proper archaeological research.

It appears that the Sātavāhanas were originally ruling in the Western Deccan,^{47.} and it may be inferred from the location of their early inscriptions that in the first half century of their rule they expanded it to the North and East,^{48.} and also to the Gujerat coast. There is also evidence that about 50 A.D. the Sakas occupied Surāst~~ma~~ and parts of N. Gujerat, and that they sought to gain control of the Bombay coast ports.^{49.} The main outline of this rivalry of the Sakas and Andhras is clear, and it is again inspired by the desire to control the ports and Roman trade. The nature of this trade is fully described in the Periplus. From Bharukaccha roads lead to Ujjain and the N.W. of India, and from Supāra to the South and to the Ganges valley. By the end of the first century, the powerful Ksatrapas, closely backed by the Kusānas had established a firm hold over the areas that lay north of Bharukaccha, and threatened the northern territories of the Andhras. Gairola has seen in this pressure the reason for the new focus of Sātavāhana power on the E. Coast in the latter half of the second century.^{50.}

An interesting field of research is suggested by a comparison of the Roman finds from Taxila, Begram etc., with those from the Tamil kingdoms. The proportion of the trade that passed from the Indus and Gujerat ports up

the northern roads to these areas in the first two centuries, and of that which came via an overland route has never been established. The Periplus refers to items of silver and glass among the imports to the Indus ports.^{51.} On the other hand, recent observations in Persia make it clear that the latter routes carried a continual traffic. Again, the Greek elements in the population of the N.W. must have called for a luxury trade very different from that of the near barbarians of the South, if Tarn's thesis is to be maintained. The great rarity of Roman finds in the Ganges valley needs explanation, as does that of N.B.P. on the Gujerat coast, particularly as there are indications of Roman objects reaching areas of Satavahana power (e.g. Kolhapur), and ample indications of Roman (Hellenistic) influence on the material culture of those regions (e.g., the moulded bowls of Kondapur, see below p. 515 and p. 326)

The breakdown of interprovincial Andhra rule (c.200 A.D.) and the period of local dynasties (Chutu, Ikshvāku etc.) that it gave rise to follow closely the stagnation of the early Tamil kingdoms. It is tempting to see in this decline a reflection of the drying up of the Roman trade.^{52.} Only now does a new series of dynasties emerge basing their power on other wealth than Roman trade, Vakātakas in the north, Kadambas in the west, Pallavas in the south, and

Guptas in the Ganges valley. In the Deccan the period of stagnation continues until well in the sixth century, when, under the impetus of Chalukya-Pallava rivalry, the great Hindu revival gave birth to the essential features of modern S. Indian Hinduism. This revival which marks the end of a dark age in literature produced the true Medieval culture of the Tamil land and marks the third stage of Aryanisisation. Siva Raja pillai writes: "The later Pallavas of the Simha-Vishnu line were the real protagonists in the Aryanisisation of the South". The new religious and Saivite literature dates from this period, and with it the editing of the early literature and the inventions of the "three sanghams" gloss.

CHAPTER VI: NOTES AND REFERENCES.

1. Gordon, D.H. A.I.6.
2. Todd, K.R.U. Microlithic Industries of Bombay, A.I.6.
3. Foote, R.R.B. I.P.P.A. pp.50-1.
4. Vavilov, N.I. Studies in the origin of Cultivated Plants. Bulletin of Applied Botany XVI, 1926 ff.
 Watts, G. Dictionary of Economic Products of India:
 Oryza Sativa & Flora of British India:-
 Hooker, J.D. Oryza for the distribution of wild varieties.
5. Rawlinson, H.G. Intercourse between India and the Western World pp.6-13.
6. Ezekiel XXVII. 19 etc.
7. Law, B.C. & others. The Age of Imperial Unity, pp.12-13.
8. ibid, p.211.
9. ibid, p.194.
10. ibid, p.193.
11. Ayyar, K.G. Sessa. Cera Kings of the Sangam Period, p.132.
12. Barua, B.M. Inscriptions of Asoka, pp.235-6.
13. Moticand. Geographical and Economic Studies, 1945, p.30.
14. ibid, p.116.
15. Smith, Vincent. Asoka, pp.47-8.
16. Schoff, W.H. The Periplus of the Erythraean Sea. pp. 46-7.
17. In a recent paper Basham suggested that the first voyages to Ceylon may in fact be linked with the W. Coast of India. He pointed to the undoubted antiquity of the words Suppāraka and Lāda in the Mahāvamsa text, and favoured the pre-Mauryan date of the colonization. The hypothesis must await archaeological proof, but we agree that if the colonization took place in pre-Mauryan times it would have naturally followed the West Coast.
 Basham, A.L. Ceylon Historical Journal, Jan.1952.pp. 163-171.

18. Siva Raja Pillai. Chronology of the Early Tamils.pp.192-
19. Chakravarti, N.P. A.I.4. p.17.
20. Shyama Shastri. Arthasāstra p.368, 101 etc; and
Joshi, S.B. Abori XXXIII p.41-56 for an interesting
contribution on the Hatti-Hātaka problem
21. Rawlinson, loc. cit. pp.89-91.
22. ibid p.92.
23. Warmington, E.H. The Commerce between the Roman Empire
and India, pp.11-12.
24. ibid, p.86 ff.
25. Schoff, loc. cit. 21.
26. ibid, 21.
27. J.R.A.S. 1904. p.403.
28. Rawlinson, loc. cit. p.99.
29. Warmington, loc. cit. p.39.
30. ibid. p.40.
31. Sewell, R. J.R.A.S. 1904, p.591 etc.
32. Warmington, loc. cit. p.39.
33. Ayyar, K.G.Sesha,loc. cit.
34. Siva Raja Pillai,loc. cit.
35. Siva Rama Murti, C. A.I.6. p.40.
36. Vithianathan S. The Pattu pāttu pp.49-52.
37. This summary is based mainly upon Siva Raja Pillai and
Sesha Ayyar loc. cit.
38. J.B.B.R.A.S.1. 1843, p.293.
39. Vithianathan, loc. cit. p.160. The words for ships
Navay and Vankam are suggestive.
40. Rama Rao, M. loc. cit. p.21.
41. Sircar, D.C. The Age of Imperial Unity, p.195.

42. Gairola, K.C. A Cultural History of the Sātavāhana
Dynasty, 1949, p.45.
43. Lal, B.B. A.I.5. p.75.
44. Sircar, D.C. Select Inscriptions. pp.211-2.
45. Rapson, E.J. Catalogue of Coins of the Andhra Dynasty,
Pl. XXVII.
46. A.S.A.R.(S.C.), 1905-6 p.2.
47. Gairola, loc.cit.p.33.
48. ibid p.14 etc.
49. Sircar, D.C. The Age of Imperial Unity, Chs. XII &
XIII; and
Gairola, loc. cit. p.100 ff. for a discussion of
this evidence.
50. ibid p.14.
51. Schoff loc.cit. 39,49.
52. Sewell, loc.cit. 1904 pp.591 ff.
53. Siva Raja Pillai, loc.cit. p.10.
54. Ayyar, C.V. Origin and Early History of Saivism in
Narayana. S. India, p.230 ff.
55. Siva Raja Pillai, loc.cit. pp.18-27.

C H A P T E R V I I .

THE N E O L I T H I C C U L T U R E A A N D B

CHAPTER VII.THE NEOLITHIC A AND B. I. THE NEOLITHIC CULTURE.1. The Settlement.

The earliest traces of regular settlements in the District seem to be those associated with the Neolithic. For the purpose of this analysis, only those sites that have yielded the distinctive A wares, together with stone artefacts, are treated as settlements. The discovery of stray artefacts without the other concomitants of the culture, although marked on the accompanying map of sites (Pl. 7) is not taken as evidence of a neolithic settlement, since it is known that the artefacts in question survived in use into comparatively later periods. Thus delimited, there are 9 settlement sites so far known in the district: they are listed above as Sites Nos., 7, 17, 30, 38, 47, 51, 57, 68 and 91. It is interesting to notice that they all lie in the western part of the district, and particularly in a cluster around Maski. This does not seem to be pure accident, although this area is the more explored. All except two of the sites were first found by Foote. A number of potential sites in the east of the district were carefully explored by the writer and produced no trace of neolithic settlement, whilst within the Maski group the discovery of another

major site was made at No. 91 by following the geographical indications already known to Foote. It is also possible, and indeed probable, that a number of other sites already known and not included in the list above may have had small neolithic settlements that excavation alone can now detect.

The nine sites have common features. Each one is distinguished by a gneissic hill or cluster of hillocks about which the settlement developed. In some cases small caves or rock shelters on the rocky slopes of the hill were extended by the building out of stone platforms before them (91). In other cases the number of such shelters was so limited that probably the original occupation was on levelled stone platforms (57). Whenever a level area could be found on the heights of the hill it was utilized in some way. It seems clear that stone-walling was built up to encourage the accumulation of alluvial soil, either natural or artificial, to assist in this process. The evidence from 91 suggests that the initial occupation of area A2 was probably made whilst the saddle was still composed of bare boulders (Pl. 51). This increases the need for careful analysis of the soil which compares the lowest infilling layer and which can supply the answer to the nature of the accumulation. Where there

was not sufficient space for this type of occupation, or where the hill had little ground amenable to levelling, the terraces or platforms were made around the foot of the hill (7, 57, 30) (Pls. 22, 386). At few sites are there caves which today contain deposits in situ. At 91 a very careful search was instituted but the limited number of caves found were all small and in most cases lacked any sort of deposit: in no case were any finds assignable to the neolithic period made inside a cave; such stray sherds as were found seemed rather to belong to the pre-medieval to medieval period. Many caves had been completely scoured by water draining through the rocks from above, and so deposits in caves may well have been of foreign origin.

In only one case (47) is there a perennial stream (the Maski Nallah) in the vicinity of the site (Pl. 40) and, although a perennial spring is reported at 30, it seems probable that either the sites relied upon tanks as do the modern villages of the area, or that the climate was somewhat wetter and the rainfall less seasonal than at present (see above p. 269). Although the possibility that surface drainage tanks were used to collect water cannot be proven, there are evidences to support ^{that} such tanks in the subsequent period, if they existed, would

have been on a small scale and incidental to the terracing works.

In Bellary District, Foote had already reached conclusions generally similar to those which he summarised in his description of the "Castellated Hills in the Deccan".^{1.} Foote writes: "The Deccan Hill forts all rise abruptly out of the plain and command the cultivatable tract around their foot, which in most cases is a black soil flat. On the larger hills the inhabitants had room for their habitations on the less steep parts of the slopes, where they had frequently spaces free from rock on which they could build their houses. These spaces or terraces which are real linchets are often held up at their lower extremities by revetments of rough stones. They vary much in size but are mostly small and frequently near the summit." Foote further noticed that many of the Bellary sites were naturally castellated and that the size of the settlement depended upon the water supply which he believed was collected rain-water "stored on the hill itself". The nature of the rocks was not suitable for the construction of wells. In some cases he found cisterns formed in natural hollows of the rocks and in many cases small tanks.^{2.} In general he concluded that such sites were in origin neolithic although their occupation continues into the Iron Age.

It is surprising that no subsequent writer, until

Subba Rao, had set about verifying these field observations of so many years standing. The excavations at Brahamagiri provided a foundation by localising a Neolithic (stone axe) Culture which Subba Rao extended by his discovery of strata of this culture on one of Foote's hill-top sites. The present writer's excavations at Piklihal have carried the substantiation a stage further. At Piklihal (Site VII) the occupation of a saddle in neolithic times was demonstrated in excavation and may be summarised thus (Pls. 50-2). The earliest occupation took place in the Neolithic A period when a rock platform was built out from the rocky slope at one side of the saddle in front of a small rock shelter. Distinctive debris of the occupation was found throughout the bottom layer of sandy soil over the rest of the saddle, and particularly in the proximity of the platform. It thus appears that this accumulation took place (either slowly or rapidly) whilst the occupation continued. The Neolithic B period coincides here with the time when a series of mud floors were levelled across the accumulated soil surface. This fact makes the conclusion reasonable, although not perhaps proven, that stone revetments had already been constructed in the 'A' period. On the new series of floors which were all of a similar thickness and nature, huts were built and an extended sort of occu-

pation became possible. The presence of post-holes and wattle-and-daub in both burnt and unburnt fragments seems clearly indicative that the style of house now used was in every way similar in structure to the Gudse house which is at present widely known in the Telegu and Kannada regions. S.C. Dube in a forthcoming study of a Telangana village describes this type of house in these words: "These are the commonest type of dwellings found in Telangana. The walls of these huts are either made of mud, or they are made of wattle-screen and plastered with mud. The roof is always thatched. The hut is built in a small enclosure and has generally only one room." We may add that the modern "Gudse" house is generally rectangular in this area, although the extent of the excavation did not make this point certain for the huts of the Neolithic B.

At Piklihal traces of a ~~smilar~~ stone platform to that of Site VII were found at Site VIII B, of probably similar date. We may thus conclude that the sites at the beginning of the neolithic period were peopled by a small number of widely separated families, and only later expanded during the course of the B period. The sites in Raichur appear to fall into three categories, based upon the extent of area of the neolithic finds. The first, which may have been market towns, but certainly cannot be called cities,

comprised Maski and Pilihal. It is indeed reasonable to ask why these two centres should flourish side by side and no certain answer can yet be given. The second, the large village, includes Kallur, Watgal, Billar^mayan gudda (whose importance will be noted below) and Rodalkunda. The third, the hamlet, includes Kotegal, Gobarkal and Navalkal. There is, however, as yet, absolutely no further clue to the density of the occupation of any site. At Pilihal it seems that A2 (Site VII) and the Area E (Site VIII) were certainly occupied. The Areas of B (Site I) must have been likewise, and almost certainly the areas of C (see Pl. 45). At Maski (No. 47) the main occupation appears to have been in the caves of the vicinity of the Asoka Edict and on the level plateau above and behind the edict; further traces of settlement could probably be found on the extreme western slopes of Sultan Mohammed's field, (Pl. 46). At No. 7, the terraced areas seem to have been mainly around the foot of the hill and on the little ledge of ground later incorporated in the medieval fortified area to the north of the hill (Pl. 12, 15a). At No. 30 the foot of the hills on either side of the saddle yielded numerous sherds and seems to have been the main area of neolithic occupation, although the little area of level ground to the north on the hillside is also almost certainly a neolithic extension of the site (Pl. 37a).

At No. 57 the traces of neolithic occupation occur around the foot of the main hill (Pl. 38⁶).

In each case it seems that the initial occupation was of this scattered nature, and it may well be that the settlement in Neolithic times at Piklihal consisted of no more than a handful of families.

2. Food - The Basis of the Economy.

The evidence for this vital aspect of neolithic life is still very slender. The excavations at Piklihal produced a large number of bone fragments from the corresponding levels, and it is hoped that a final analysis of these will considerably strengthen the tenuous suggestions now to be advanced:^{3.} (a) The Society was probably largely based on a cattle economy. The evidence for this is that at Piklihal, terracotta figurines of humped bulls (zebus) were found in the Neolithic A levels. Numbers of 'horns' of terracotta were also found. At Maski Munn found the head of one of these terracotta figurines but did not understand its significance (this is illustrated for the first time in Pl. 94^a). The terracotta bulls bore a striking resemblance to some of the rock bruised figures that abound in the region and which it is regarded as probable date from this period. The pottery of the

period is characterised by wide shallow bowls, lipped vessels and spouted vessels. It seems almost certain that some of these were milk vessels. The scapula of a bovine, as yet not identified, was found in the Neolithic burial in Site VIII A, among the grave goods. The ash mounds of the district appear to date from the Neolithic period and to be largely the result of the combustion of cattle-dung (Apx. I.) (b) It is probable that the pig was also domesticated. Terracotta figurines of a generally similar type to that illustrated by Wheeler⁴ from the IB Culture at Brahmagiri were found by Munn at Maski, and as a surface find at Piklihal. The terracotta illustrated by Foote,⁵ from Kapgal is of the same class. The characteristic of the animals is the curious emphasis of the tail, shown by two rough incisions across the haunch. (Pl. 93a No. 1 is the Munn specimen). It is possible that the fowl was domesticated. Several bird terracottas of A ware were found as surface finds at Piklihal. This problem may be solved by analysis of the bones from the excavations. (This must have been the Grey Jungle Fowl (*Gallus Sommeratii*, Temminck), the Tamil Katu Koli, which as Jerdon noticed is peculiar to the southern peninsula of India and which north of the Narbada river gives way to the Red Fowl (*Gallus Ferrugineus*, Gmelin).⁶).

, There is, as yet, no certain evidence that the water buffalo was part of the neolithic economy, although at both Piklihal and Billamrayan gudda it appears to be indicated in rock bruising, in both cases along with animals of the chase, possibly, therefore, the buffalo was still wild.

(c) The numbers of bruised representations of sambar deer and black buck on the rocks around the settlement, probably dating from the Neolithic period (see above Ch. V.), seem to indicate that hunting formed a part of the economy.

This hypothesis is strengthened by finds at Neolithic sites of numbers of geometric microliths, often associated with a 'hunting' economy.^{7.}

(d) Part of the economy was evidently based upon ~~the~~ agriculture. The evidence for this assumption is slender. At Brahmagiri a saddle quern, three rubbers and a stone ball were found in the IA 'sub-phase', and more occurred in the IB. At Piklihal a saddle quern was found in situ in a late layer of the Neolithic B and fragments of rubbers also occurred. These are taken as evidence for the cultivation of some type of cereal, and the finding of coarse straw "like that of the great millet (*Holeus sorghum*)" in an ash-mound, reported by Foote^{8.} adds strength to the probability that it was a variety of millet which was cultivated.^{9.}

The practise of agriculture is supported in the Neolithic B by the diversity of implements made: Subba Rao notices the pre-

10.

sence of 'hoes' resembling chipped chert objects from Harappa. It seems, however, that the great range of types of axes and the comparative uniformity of size-groups indicate that some among them were also used as a kind of hoe or digging stick, (see below p.375). Large numbers of the specimens found at Piklihal as surface finds showed very heavy signs of use whilst being so coarse and irregular in form and finish as to make them quite ineffectual as any sort of wood-cutting axe.

A further indication of the practise of small scale hoe agriculture may be taken from the knowledge of the stone revetment and terracing. It seems likely that the field terracing still practised in the vicinity of Piklihal which converts comparatively large areas of waste ground into cultivable fields of the rich black alluvial soil so much coveted by the modern farmer, and which was already known during the Neolithic A at Piklihal, would have formed the basis of small scale 'garden' culture among the rocky hills. Such gardening is still practised among the modern Chenchu. The "flat black plain" of cotton soil considered by Foote as the cultivated area was probably only cultivated at a later date as it is very heavy to work (see above p.49), and if forested, would be troublesome to clear in the first instance without iron tools.

(It is possible that the absence of iron tools may be one cause of the apparent absence of early sites on the areas of Deccan trap, particularly as a plus rainfall in ancient times would imply a considerable eastwards extension of the mixed deciduous monsoon forests at present limited to the highlands near the ghats).

3. The Technological Basis of the Economy.

A comparative study of the results of the three excavations of neolithic sites in the Deccan, tends to confirm the conclusions of Wheeler at Brahmagiri. Stated generally the Neolithic A and B periods were based upon stone tools, and the presence of copper and bronze fragments in small quantities in the B period, whilst justifying the term 'chalcolithic' revived by Lal,¹¹ but rejected by Seshadri¹² does not in any way alter this fact. Thus whilst from the purist's point of view "pseudo-neolithic" is correct, the more realistic conclusion, having regard to the limited excavational evidence before us is that the basic culture of the B period remains Neolithic. At Brahmagiri, the solitary copper flat axe¹³ is compared with the finding of "15 complete and 29 broken polished stone axes" in the town site excavations of 1947 in Neolithic levels.

In view of the conflicting terms in use it is necessary that a clear classification of the industries be put forward. The stone industries that continue throughout the Neolithic period may be generally subdivided into (a) core tools, flaked and polished, or pecked and of varieties of trap rock; (b) flake tools in small numbers, probably often by-products of the axe manufacture, and (c) a range of microlithic tools in a wide range of siliceous materials.

(a) Core Tools. The largest group of these is the polished axe or 'celt' in its several varieties. Classification of the vast Foote collection resulted in the recognition of 12 types, described with reference to the geometric form of body and section.¹⁴ Subba Rao developed this classification mainly with reference to the cross-section. Both these, however, fail to recognize certain basic typological and technological points that appear to us to underlie the morphology of the whole range of specimens. The first point that must be made is the distinction between the flaked and polished specimens, and the pecked.¹⁵ Subba Rao discusses the manufacture of the first, main, group in some detail, but does not seem to have noticed the presence of the pecked specimens. Foote considered that pecking was a

16.

third stage in the making of a fully polished axe. It appears that those of the first group are flaked in almost the same way as the palaeolithic hand-axe, and finally either more or less polished. The majority seem to have been polished only in the region of the blade. The butt was often left rough. The second group, of pecked specimens, as far as observed at Piklihal, are made of a coarse greenish diorite and have invariably an oval or circular section. They seem to belong to a quite new technique which was applied in the making of rubbing-stones, pounders, etc. It is interesting to notice that the Ethnological collection of the British Museum contains numbers of pecked specimens of this form of axe from S.E. Asia.

For the main group of specimens it seems that a classification according to size, throws considerable light on the subsequent analysis of Foote and Subba Rao. This classification obviously implies some sort of functional division. We propose four classes: small, up to $3\frac{1}{2}$ " in length, medium-small, $3\frac{1}{2}$ " - 5" in length, medium-large, 5"-7" in length and large 7" - 9" and over. This division carries with it the important consideration of weight which clearly influences use. If it be now applied to the typology (Subba Rao's) it emerges that small

includes his type 10, the adze, with its carefully ground cutting edge.^{17.} This type was clearly employed for finer and more delicate woodwork. Numbers of the flat axes with roughly rectangular section fall into this class. In this connection it may be noted that the flat axe of a black schist which both Foote and Subba Rao take to be the prototype of a metal flat axe may just as well be^{18.} a form derived from the metal axe. The Medium-small group at Piklihal was numerically large, and many of the specimens were much battered with use. In this group the varieties of square or pointed butt may be taken, as Subba Rao suggests, to indicate the style of hafting. The resulting tools may have been either simple axes or hoes for a multiplicity of uses from scrub cutting and hewing small branches to small scale hoeing. This latter is certainly suggested by numbers of broad triangulate forms often of coarse finish and not at all suitable for woodwork of any kind.

In the medium-large and large groups, two types seem to predominate. The well-finished and polished axe which clearly was of use for tree felling, and the coarser and heavier specimens which again were probably used for hoeing or digging purposes. It has been suggested that small scale terrace cultivation was part of

the economy. It seems clear that the plough was unknown and the hoe must have been the prominent tool. If this is so, then we must look for the hoe among the stone implements that are numerically largest.

Chisels occur in small numbers alongside axes at several neolithic sites in the district. These also resemble very closely those described by Foote and Subba Rao in Bellary. Specimens have been recorded at Piklihal, Maski, Billam Rayan Gudda. They have often finely polished blades and, it seems to us, were in reality a wood-working tool used for splitting and smoothing wood. Perhaps the term 'wedge' would be more appropriate, or cold-chisel.

19.

Picks of the sort found by Subba Rao have not as yet been noticed in the district. They may have been used for rock clearing purposes..

Disc Choppers. A number of discs of trap rock occur. They resemble generally the palaeolithic chopping tool of 20. Movius.

(b) Flake Tools. No flake tools of the type reported by Subba Rao from Sanganakallu Phase I occurred in the Piklihal excavations. Nonetheless, flake tools of the trap rocks were found as surface finds at a number of sites, particularly at Billam Rayan Gudda and in smaller

numbers at Maski, Kallur and Piklihal. The finds at Billam Rayan Gudda, which Munn supposed to be a Neolithic factory site, make it probable that the objects were in origin by-products of the axe manufacture. On the other hand, there are numbers of specimens that bear use marks testifying to their functional value. Of the specimens from Billam Rayan Gudda about one half bear a brown patina of the sort described by Subba Rao in his Phase I and if this may be taken as indicative of age, would seem to suggest the presence of this phase at that site. On the other hand there is little typological differentiation of the patinated and unpatinated flakes. The majority are either flakes or blade flakes; the material throughout is grey dolerite. That the longer blades could be by-products of the manufacture of axes is amply attested by the great blade flake-scar on an unfinished specimen from Piklihal. (Pl. 98 No. 2). In addition to these flakes the excavations at Piklihal (Site VIII A) produced 5 large chert blades among the burial goods of a neolithic interment. The scarcity of such large blades in the excavation must reflect the shortage of raw materials, of suitable size. Of comparable length is the rejuvenation flake from Site VII (5) (No. 1 of Pl. 104).

(c) Microolithic Industry. The excavations at Piklihal

revealed a microlithic industry continuing throughout the Neolithic A and B periods. The implements are made of a variety of silicates all of which occur in pebble form in the rivers bounding the Raichur Doab. They indicate primarily a blade industry, but numbers of other forms do occur. A small number of the blades have retouched edges; these include backed blades, end-scrapers, and geometric forms. (The term 'geometric' has been discussed above p.21). The vast majority of the blades are without retouch, and many of them show heavy use marks, whilst many were apparently broken in use. It must be concluded that occurring on habitation floors these were objects of household use and often rapidly discarded. The geometric forms are similar to those included by Seshadri in his 'hunting' type of microliths. Their occurrence at Piklihal is strikingly illustrated in Site VIII A (5) where 5 lunates were found with 35 blades, (1) and if ^{as} the above writer contends they may be taken to illustrate a hunting economy some explanation will be needed to account for their presence in the Piklihal 21. Neolithic A. In this context it is interesting to note

(1) These figures are those recorded on the site and do not refer to the Numbers sent to London for study which are quoted in Table IV p.273 above.

a group of 5 lunates found by Leakey in excavations in Gamble's Cave II and maintained to be the "barbs of an arrowhead"²². Leakey states that the position of the lunates left no doubt of their having been hafted as an arrowhead.

(d) Miscellaneous Stone Objects.

Saddle Querns occur in numbers both in excavated levels and as surface finds at Piklihal. At Brahmagiri one occurred in the excavations from a IA level.

Pounders, presumably for use with the querns, occur in the form of gneissic balls of $1\frac{1}{2}$ " to $2\frac{1}{2}$ " diameter. These are sometimes slightly flattened on the sides of a cube and bear marks of battering. One such poulder was found at Piklihal in situ in a quern in a late level of the Neolithic B.

Pestles both cylindrical and square occurred as surface finds at Piklihal and may well date from Neolithic times.

Palette Stones. A flat oval of a coarse grained mica gneiss was found at Piklihal as a surface find. This resembles that found by Subba Rao in the 10th layer of the Sangankallu excavations (i.e., Neolithic A)²³ and seems to have served a similar purpose to those described²⁴ by Foote from Maski and Bellary. Probably they were used for the grinding of soft earthy haematite for

toilet purposes.

Grooved Stone. A large grooved stone, of oval form and weighing about half a hundredweight was noticed on the surface at Piklihal. Its function was presumably to tether an animal, although the form resembles that of the belted hammer-stone described by Subba Rao.^{25.}

METAL TECHNOLOGY.

There is, as yet, no evidence that any form of metallurgy was known during the Neolithic A. It appears that during the B period copper and bronze working came to use, although in the Bellary/Raichur area the objects so far found are very few, and were probably rarities. From Piklihal two objects only are certainly Neolithic: a fragment of the rim of a (?) bronze bowl and a copper chisel with rectangular section, $6\frac{1}{4}$ " long. Of the famous Kallur swords (see above p. 75) it is as yet not possible to add anything to Gordon's remarks.^{26.} Gordon writes: "It is probable that these swords were imports from the North, and though it is possible to claim them as weapons of the Vedic Aryans, they are likely to be late ones and may be connected with an extension of Aryan influence southward about 800 to 700 B.C." It appears that the possibility of dating them must await further corroboration as the archaeological evidence for the Aryan expansion in

the North, let alone in the South, is at present most tenuous. Of the Neolithic finds from Brahmagiri the copper (?) flat axe is the most interesting. The other small items; pins, rings and spirals, are of interest in that two objects were of bronze, one containing 9% of tin and the other apparently 15.81% although the report does not quite make this clear.²⁷ There appears to be some confusion in the list. The analysis of No.6 'copper bangle' appears to be that of No. 4 'bronze finger ring' and vice versa.

The high tin content of the bronze from Brahmagiri is interesting as compared to analyses of bronze objects from Adichanallur and the Nilgiris; there, high tin content is a general feature.²⁸

POTTERY.

The technology and morphology of the Neolithic wares have been dealt with in Chapter VI. A close similarity of wares and forms is found with the neolithic wares of Brahmagiri and Sanganakallu, whilst a more surprising relationship is found with the forms of pre-Roman Arikamedu and of the post-Neolithic ware of Raichur itself. The wares are also found to have a number of suggestive affinities with sites in Mahārāstra (see below p.394f).

4. Trade and Communications.

There is no evidence of any sort of wheeled transport in Neolithic times in Raichur district. It is, therefore, probable that the bull or bullock may have been used as a pack animal. (In modern times the bull is never used for this purpose).

There is, at present, nothing to testify external trade from any of the excavated Neolithic levels. There is, however, somewhat better evidence for the localised development of special industries. Thus Site No. 7 may be regarded as a centre of axe manufacture, with the rich supplies of trap dyke noted in the locality. The origin of the raw material for the numbers of axes at Maski and Piklihal is not at present clear. Nor is it at such sites as Nos. 17 and 57 both of which are many miles from a suitable source of raw material, and it seems reasonable to suppose that axes were the subject of some sort of trade (No. 57 is nearly 10 miles from a small dyke S. of the Tungabhadra).

Something similar may be the case with the great axe factories around Kupgal in Bellary.

Even more striking is the evidence for a trade in microliths. These are made, in this district, from a

variety of silicates all of which occur in the gravels of the river Kistna and Tungabhadra. Subba Rao, noticed the large numbers of cores and artefacts that occurred at several sites on the southern banks of the Tungabhadra without drawing attention to this aspect. In Raichur itself two sites are now known (No. 24 and 84) each within a few miles of the Kistna and each lying near what is now a main highway; both are on hillocks which were used as factory sites, and large quantities of used and unused pebbles, waste flakes and finished tools are to be found there. It is, however, certain that many pebbles must have been carried to such centres as Maski where large numbers of used blade cores were found in the course of excavations. It seems probable that this formed part of an organised trade. 29

No useful evidence can be derived from Marshall's claim that the find of lapis lazuli at Harappa could have originated in the Nilgiris, as further efforts to find this stone or reference to it in the district have so far been unsuccessful. 30.

It is also possible that there may have been some local trade in pottery. This can be inferred from the distinctness of the incised wares found at Piklihal, Billam Rayan Gudda and Kallur, and at Brahmagiri. Not

only do they differ from the rest of the A wares, but sherds from the four sites bear a remarkable similarity to each other. Similarly the slipped, burnished A wares of Maski and Piklihal occur more frequently at those sites than the plain slipped painted wares (the former having a very distinctive high mica body-content). At Brahmagiri both wares occur but apparently in inverse proportion. Perhaps this indicates that these rare wares were also the products of particular towns, although it must be admitted that the small number of sherds so far found is insufficient to form any solid statistic. In this context it is noteworthy that no kiln site has yet been discovered and the information which such a mass of material so often yields is not yet to hand.

In conclusion, the evidence of trade accords well with the picture of settlements as hamlets and small villages linked to market centres which were also in some contact with one another. This survives to this day as the basic rural trade pattern of the region.

5. Social System and Population.

The slight evidence for a growth of population during the B period has already been mentioned above

(under the 'Settlement'). There is no direct evidence for the social system of the people, and perhaps the indirect evidence of comparison with pastoral peoples who are still in a comparatively flourishing condition (e.g., the Bantu) is better than with the pockets of survival in India itself.

Some amplification of this point is vital to a right understanding of the cultural relationship of the Raichur Neolithic A and B (the dominant culture in the area throughout the period under discussion) with the modern primitives who today maintain that level of culture in retrogressive pockets surrounded by the more advanced Hindu peasantry with its ever growing links with the city.
 31.
 Thus Haimendorf could write of the Neolithic ("Stone Axe Culture") of Brahmagiri: "Here it (the stone axe) is accompanied by pottery of a very crude, hand-made type, and it would seem that the makers of this pottery and the neolithic axes were primitive shifting cultivators who kept pigs and fowls but lacked domesticated cattle. Thus they stood on a level of economy and of material culture comparable to certain Indian tribes practising the slash-and-burn cultivation, such as the Baigas and Kamars of Madhya Pradesh, the Hill Reddis and Kolams of Hyderabad or the Uralis of Malabar."

From the analysis of the Neolithic culture contained in this chapter it appears that these people were different from the tribes in a number of fundamental characteristics. The settlements included market centres, and the houses appear, at any rate latterly, to have been of a permanent kind. The economy was largely based on cattle and probably also pigs and fowls, whilst hunting supplied a valuable additional source of food. The cultivation of small fields of rich black earth is indicated, although it was ~~probably~~ a hoe cultivation. There is some evidence for an organised trade in stone implements, and latterly in such luxury commodities as bronze pins. Thus even if the essential division of pastoral and agriculture routine was a sexual one, there is every indication that some small degree of specialization was already inherent in the society. The high skill shown by the makers of pottery is far from ^{that of} very crude hand-made ware and may be an indication of families of professional potters. Likewise the trade in stone axes may be taken to indicate that at those sites at which an abundant supply of raw material was available specialist manufacturers were already present. The same is probably the case for the microliths, although the presence of cores which have been worked to exhaustion at sites far from the source of the raw material may be

taken as an indication that these lighter commodities were also traded in the form of raw material for local utilization.

We may thus conclude that the society in the Neolithic period was a far more dynamic one than of any of the comparable tribes of ^{modern} India. Likewise it may be noted that the majority of the modern tribes are "jungle dwellers" whose oecology has numbers of highly specialised facets almost certainly foreign to the Raichur Neolithic. Among these may be mentioned the fact that the modern tribes live in the jungle but rely on contacts with outside traders for many commodities. The bewar or dahi cultivation is a highly specialised affair, and probably differs radically from the hill-garden cultivation of the ancient Neolithic. None of the modern tribes, with the exception of the obviously more advanced Todas can be said to be largely pastoral and even then it is the buffalo and not the cow that is important.

Returning to Haimendorf's analysis of the modern tribes ^{32.} we see that none of the cultures listed can really be compared with the Raichur Neolithic. The Bondos and Gadabas breed cattle and practise a hoe cultivation mainly of rice; the Reddis lack hoes or

cattle or terrace cultivation. It is in fact the Gond tribes with their iron that provide the nearest parallels and clearly they have already absorbed many elements of the post-neolithic if not later cultures, and as are the Malas and Madigas of the Deccan Village, are no longer comparable in any way.

6. Burial Customs.

At present our knowledge of burial customs in the Neolithic period is limited to two inhumation and eighteen urn burials excavated at Brahmagiri, ^{33.} three inhumations from Piklihal, and an inhumation burial from Maski which, although not clearly Neolithic, appears to belong to the series. Wheeler described those at Brahmagiri as "of two kinds. For infant burials, which were numerous, large, roughly made urns of uniform type were used, the child or infant being folded up into close compass and packed into the pot.

"Two other inhumation-burials were found, both extended, but only one of them (of a child 8-10 years old) could be completely uncovered. The head lay towards the east (95° M); two earthen bowls were placed near the upper ends of the two femurs, and a vessel with a funnel spout lay above the skull." It may be noted that all

these burials occurred in the Neolithic BI period.

Of the Piklihal burials (which have been described above: Ch. 5) only one, that of a child of 10-12 years, was from Neolithic A levels. The body was extended, lying on the right side, the head towards the S.E. There were no grave goods. The grave was apparently a small hollow scooped out to the virgin rock. ^(PL 55b) The two adult burials from the same site were also extended. The one lay on the back with head to the North. The shallow grave had been filled with stones after burial. The grave goods consisted of a spouted pot, of A2 grey ware, resembling that from Brahmagiri, lying by the right side of the head, and a tall vase of similar ware by the pelvis. ^(PLs 54, 55a) The other lay also upon the back. By the right side of the head were the 5 large chert blades, described above, whilst two stone axes lay at the feet. A few sherds of buff ware, apparently from a small bowl, lay at the pelvis whilst the scapula of a bovine lay immediately above the body, presumably food for the dead. A large boulder seems to have marked the grave. The skeleton was probably of a male. ^(PL 58a)

The Maski burial contained two vessels of A2 ware markedly similar to those from Piklihal.

In conclusion it may be noticed that in no case is there any evidence of a multiple or secondary burial. This fact is important in comparing the Raichur Neolithic custom with that of the Post-Neolithic period.

The evidence thus far available seems to indicate that infants only were buried in urns, and children of about 10 or over were buried in extended position. The graves must all have been in or near the settlement area, and the Piklihal burials suggest that they were in close conjunction with the houses. It is possible, although further evidence must be awaited, that the grave goods varied according to the sex of the buried person. Variations of this sort are noted among modern ^{34.} Indian tribes.

The male skeleton from Piklihal Site VIII A was of a large, heavy boned man, with thick skull, and markedly prognathous skull, and long heavy bones.

7. Religion and Arts.

Under this heading it is intended to combine various objects of no obvious utilitarian value, but associated with the period. It does not appear possible to separate the two categories. The belief in a life after

death is clearly testified by inclusion of grave goods, presumably for the use of the individual concerned. In a description of the rock bruising and paintings at Piklihal note was made of the large numbers of bulls, of hunting animals, deer, etc., and of male figures with staff in some cases. These appeared to form a class and for various reasons it was determined, belonged to the Neolithic period. In addition certain rock shelters and caves, remote from the main settlement and decorated with numerous signs in red ochre were noted and the suggestion made that these might be compared with the initiation schools of the Australian aborigines, or with the cave reports of Hindu sādhus.

We may add the terracotta bulls discovered also in the settlement area and of undoubted Neolithic origin, and the curious footed stand found in similar levels. As noted above Munn found a fragment of the head of a similar bull at Maski. The specimen is of buff ware with traces of red slip. Foote reported in his Catalogue Raisonné, another surface find of a terracotta figurine at Maski of dull red ware. Through the courtesy of Dr. Aiyappan, Superintendent of the Government Museum, Madras, I have examined a photograph of this object which appears to be the torso of a bull. The hump is missing and the scar of

the point of application is still visible in just the same manner as it is upon a similar figurine from Pikli-
 35. hal. (Pl. 94 Nos. 1, 2, 4 and 8). The artistic nature of all these objects is certain; less certain, however, is their religious significance, and it must suffice to suggest that the bull was regarded as of some vital importance to the society, and for this reason figures in these forms. It is not possible to relate the male figures with a divinity but the fact that no female has as yet been noticed perhaps reinforces the importance of the pastoral (male) part of the economy, and the insignificance, relatively, of the horticultural (female) part.

8. The Extent of the Neolithic Culture.

In discussing the extent of the Neolithic culture of Raichur, three classes of evidence present themselves: the settlement sites, the pottery and the stone industries. Thus in the district itself, as has been already noted, there are only 9 known settlements, although stone axes have been recorded at no less than 22 sites, and micro-liths at 17. This is probably best accounted for by the continued manufacture and use of these artefacts in later periods, but it demonstrates well the hazards in dis-

cussing the extent of our Neolithic culture solely by the finds of stone axes or microliths. (PL7)

From the point of view of the settlement this culture can at present be only clearly defined at Sangankallu and at Brahmagiri. That there are further settlements in the rich sites around Bellary city, and at Kupgal, is certain, but the explorations of Foote and others in the adjoining districts do not add to this meagre list.

The pottery distribution is also limited to the same sites as the settlements. Here, however, two important new sites must be noted as extending the neolithic wares. Recent explorations and excavations in Mahārāstra have revealed a chalcolithic culture at Jorwe, a village on the river Pravara, 5 miles east of Sangamner. Here, large numbers of fine wheel-thrown, grey and buff ware painted vessels were found, many with cylindrical spouts. Also abundant microliths occurred, and smaller numbers of copper flat axes, bangles etc. The Jorwe painted ware was fired at a fairly high temperature, and specimens that I examined in the Museum of the Deccan College Research Institute, Poonah, also revealed that the painting, often of cross-hatched squares, and straight geometric line patterns closely resembles the Painted A3 and 4 wares of Raichur and Bellary. Similar sherds of

36.

painted ware have been reported from Nasik, which the excavator describes as closely resembling those from Jorwe. Besides the painted sherds from Jorwe a number of complete large urns of grey ware, identical with the Raichur A1 and A2 wares and of forms closely resembling the distinctive urn forms illustrated by Wheeler from Brahmagiri IB period, were found. There were also numbers of rims, with characteristic finger-tip and applique ornamentation, of a form resembling those of A1 and 2 wares from Raichur and in a range of buff and grey colours. 37.

The report on this obviously important discovery is eagerly awaited.

A further site yielding painted pottery and grey wares of a similar form was discovered in 1951/2 and later excavated by the Archaeological Department, Western Circle. Mr. Deshpande writes:- "Bahal is on the bank of the Girna river in the Chalisgaon Taluka of East Khandesh district. Excavation revealed the following sequence:-1). Late Prehistoric Period characterised by painted pottery.

2). Proto-historic period characterised by the use of iron and copper.

3). Early Sātavāhana period with N.B.P.

4). Late Sātavāhana period.

"A burial site on the other bank of the river was excavated where one pit and three urn burials were unearthed. The pottery is associated with blades of chalcidony and camelian beads. It also bears graffite and a few pots are painted with black lines. Iron and copper are conspicuous by their absence from these graves".^{38.}

Sherds from the excavation of the graves and from the Satavahana period of the settlement site, were of black and creamy grey ware, and in texture and appearance resembled the A5 Transitional ware sherds of Piklihal. Their technological nature and chronological significance at Bahal is not yet clear and is mentioned here only as suggesting a further sequential relationship with Raichur. This site is clearly of considerable interest and deserves further attention. The burial with microlithic blades is an interesting feature again suggestive of cultural affinities with Piklihal.

A further shred of evidence which seems to indicate the much greater distribution of A wares in Bellary and the adjoining districts is given by a small collection of sherds of Neolithic A1 and 2 wares collected by Sewell and at present in the Indian section of the Victoria and Albert Museum. A fragment of grey ware, the rim of a characteristic bowl (No. 328. 1914) is described as "found

in a prehistoric burying place near the North Bank of the Krishna River". From Daroji Hill in Bellary District a lid of coarse grey Al ware is of a new type, being roughly flat with a raised and hollow flange in place of the more common central knob. (No. 327. 1914). There is also a collection of grey and buff spouts and perforated sherds described as from the "Bellary Hills", and collected by the same worker. Beyond this the Foote Collection contains pottery from a number of sites that in the light of recent researches might prove to extend the range of neolithic pottery in several directions. The list of sites at which Foote claimed to have discovered 39. Neolithic pottery is quite impressive. For example, it will be seen that of sites in Raichur, 6 were correctly identified, whilst only one was incorrectly identified.

The extent of the stone industries is even more perplexing than that of the pottery, and we shall return to some of the problems raised by them in connection with the dating of the culture. It was noticed above that stone axes occurred at 22 sites in Raichur, although only 9 neolithic settlement sites were recognized. One important reason for this disparity will become clear in subsequent chapters, when an increase of population results in an expansion of old and the occupation of new settlements.

The evidence of excavation at Piklihal and Brahmagiri shows that the use (and possibly also the manufacture) of stone artefacts continued into the subsequent periods, although metal (particularly iron) tools became the predominant technological basis of the society. There is, therefore, reason to believe that at a number of the find spots of stone axes, there was in fact no settlement cognate with the Neolithic A and B cultures of Raichur and the adjoining districts. If this is true of the narrow compass of a single district, how much more so is when all-India distribution of stone axes is plotted. At Taxila four stone axes occurred in the excavations and have been described by Marshall^{40.} as "found in strata of the historic period on the Sirkap Site, dating back no further than the first centuries B.C. and A.D." A few further examples will reinforce the point. At Bhita, Marshall found stone axes in contexts ranging from Kushan to 9th century A.D.^{41.} At Bangarh an axe is reported in Kushan levels.^{42.} At Amarāvati no less than "forty packing cases" of stone artefacts, mostly polished axes, were collected within an area of 10 square miles around the site.^{43.} The great new excavations at Kausāmbī have produced several well stratified specimens that will, when the report is published, add final proof to the 'late' context of these objects. In the light of the Neolithic of Raichur and Bellary these

finds are not so astonishing as they once were, and we can now point to cultures based upon the stone axe in chronological juxta-position to those enumerated above. Finally the stone axes discovered by De Terra at Burzahom, may, if more grey burnished pottery can be produced, be found to provide a northern extension of a neolithic comparable to that of the Deccan and revolutionise the dating generally accepted for the site.⁴⁴ (A single sherd of ware comparable to Raichur A ware was collected by Gordon at the site and is now at the Institute of Archaeology, London.)

It is clear that in these circumstances the Sirkap city (etc.) cannot be dubbed 'neolithic', and we may thus conclude that the extent of the neolithic of the Deccan cannot be based upon the isolated finds of published stone axes. The whole complex of cultural features described in the first part of this chapter must be regarded as the real test of the culture. The difficulty felt by⁴⁵ Marshall in accounting for the axes vanishes in the light of dating now put forward for the culture.

Much the same is true of the microlithic industry of the period. It is reasonable to remark that it has some affinities with the blade industries of the Indus Valley sites, and also that it has considerably closer affinities

with Bahal and Jorwe, but the study of the industries 'in vacuo' is likely to confuse unless due reference is made to the attendant features of the culture. The careful analysis of the various microlithic industries now known in India must be precedent to any attempt to understand their cultural relationships. Thus for example Gordon suggests that the predominance of blades in the Maski excavations constitutes a non-microlithic industry whose products are all typical in fact of the chalcolithic repertoire of the Indus Valley. This industry therefore ^{is} notably distinct from, for example, the Jabalpur series reported in the same work. ^{46.} It is, however, abundantly clear that the settled economies of the Indus Valley cities and of the Raichur sites introduced quite new demands on the local stone industries whilst the central Indian forested sites were often probably those of hunting and collecting tribes. The small numbers of geometric forms reported in the excavations ^{47.} at Sanganakallu and from the excavations at Eklihal perhaps show the part still played by hunting in the economy of the period. The conclusion thus seems legitimate that local supplies of raw materials and local demands of the various economies could modify the microlithic industry in a number of ways, and this does not add to the clarification of disparate industries either

in time or space.

We therefore must conclude that whilst either stone axes or microlithic finds are likely to be useful pointers to a Neolithic or post-neolithic culture, their presence, unless settlements are taken as a whole and whole cultures are first grasped, does not necessarily indicate them in the sense in which we are here using the words. In this connection, it is perhaps apposite to mention that the mere plotting of find spots of stone polished axes or of microliths, apart from its utility as a visual aid, has very little real meaning, and is likely to be actively misleading when the objects concerned belong to possibly disparate 'cultures' in the wider meaning of the word.

APPENDIX I.THE ASH MOUNDS

More than a century has elapsed since Newbold's paper on "the occurrence of volcanic scoria in the southern peninsula" first drew attention to the ash mounds of Bellary. A considerable literature has grown around the subject and widely divergent theories have been produced to account for the mounds. Recently, new light has been thrown upon certain aspects of the problem, particularly from a new analysis of specimens collected by Zeuner, and Subba Rao's report that pieces of vitreous slag occurred in the excavations at Brahmagiri and Sangana Kallu⁴⁸. in layers of the stone axe culture.

For convenience, we shall list the various types of mounds, etc., so far reported, with notes on size and form and key references. Ash has been reported at three types of site, and these will be listed separately.

I. Cinder Camps.

Bellary District.

- | | | | |
|----|--------------|----------------------|---|
| 1. | Kupgal 1. | Footnote, IPPA p.93. | Rudely square, about 60 yds. each side and vallum 15'-16' high when best preserved. |
| | | Newbold, JRAS VII. | |
| 2. | Kupgal 2. | | Rudely square, about 50 yds |
| 3. | Halakundi 1. | | Square, 60 paces each side. Vallum much broken only 4' high. |
| 4. | Halakundi 2. | | Square, smaller than 3 and much broken. |

(Cinder Camps contd.)

- | | | | |
|----|--------------|--------------------|---|
| 5. | Gadiganuru | Newbold, JRAS VII. | Square in shape. |
| 6. | Sanavasapur | | Irregular oblong 75' x 55' with vallum 5'-6' high. |
| 7. | Lingadahalli | | Approximately circular, circumference of 254 paces. |

II. Ash Mounds

Bellary District.

- | | | | |
|-----|---------------------------|---|---|
| 8. | Nimbapur | Newbold JRAS VII.
Foote, ibid p.93.
Sewell, JRAS 1896. | Length 45 yds., width 18 yds, height 10'-14'. |
| 9. | Kanchagara
Belagallu | | Oval, 70 paces by 40 at the widest. |
| 10. | Sugura | | Small and flat. |
| 11. | Kakballa | | Still smaller patch on the saddle of the hill. |
| 12. | Kurikuppa | | On the hill. |
| 13. | Saridamma |
Subba Rao, ibid
p. 77. | (Saudamma W. of Sangankallu)
A spread of cinder. |
| 14. | Kudatini.
(Budikanama) | Newbold JRAS VII.
Longhurst, ARASI
1912-13. p.145.
Cole MJLS VII.
Foote, JRASB LVII | 420' in circumference, 46' high. |
| 15. | Gudekallu | Subba Rao, ibid
p.213. | A large cinder mound. |

Chitaldrug District.

Mounds called Budihalu, Budibetta, Budigunta have been noticed by Col. J.B. Mackenzie in the district, but no further information is available.

Raichur District

16.	Gaudur	See above Ch.III Site No. 16.	Irregular rectangle 300' x 185' and 25' thick at S. end.
17.	Hire Benkal	Site No. 23	Size not given.
18.	Idgaunpalli	Site No. 26	Oval about 250' x 200' and 15' high.
19.	Kavital	Site No. 35	Size not given.
20.	Kutuknoru	Site No. 40	280' x 250' and 20' in height.
21.	Manchanpalli 1.	Site No. 45	Two mounds each measur- ing about 100' x 50' and 5' in height.
22.	Manchanpalli 2.	. . .	
23.	Manvi	Site No. 46	Size not given.
24.	Kurkundi	Site No. 39	Size not given.
25.	Wandalli	Site No. 67	Oval 300' x 200' x 50' in height.
26.	Yergunti	Site No. 69	Size not given.

Gulbarga District.

27.	Thanmandi Thanda.	Mahadevan, Note on Archaeological finds, JHGS IV pt.1. p.160.	100' in diameter and 15' high.
28.	Halakalappa	150' in diameter and 15' high.
29.	Mallur	20' in diameter and 5' high.
30.	Benkanhalli	Mukherjee, JHGS IV pt. 1, p.54.	46' x 16' x 7' high.

III. Graves with Ash Circles, etc.

Raichur District.

31.	Chik Benkal	See above Ch.III, Ch.IV. Site No.8.	Identified by Munn.
32.	Lingsugur.	Site No. 41	Identified by Munn.

(Graves with Ash Circles, contd.)

33. Piklihal Site No. 91 Described above p.243

Gulbarga District

- | | | |
|------------------|---|---|
| 34. Rajan Kallur | Mahadevan, Note
on Archaeological Finds,
p.12. IV pt. 1. | |
| 35. Kupi | Mahadevan, ibid
p.12. | About 20 dolmens with
ash circles. |
| 36. Shapur | Meadows Taylor
BBRAS IV p.392
Munn, JHGS pt. 1.
p.129. | Munn reports that the
pandre mutti referred
to by Taylor in this
and other sites in the
district is in fact
identical with the
cinder mounds. |

We may summarise the distribution of the several types of accumulation thus:- the ash mounds occur at sites in four district: Gulbarga, Raichur, Bellary and Chitaldrug; the cinder camps have so far only been reported in Bellary; the ash scatter graves in Gulbarga and Raichur. With regard to the latter class of site it must be born in mind that only the specimens from Piklihal and Lingsugur have been definitely shown to be ash, whilst many of the other examples may prove to be similar to Site 87 above (Ch. III) where graves of similar type were found to have a Kankar scatter in place of the ash. (Pl. 11). We may note that of the sites 1-30 no less than 10 are in close proximity to neolithic settlements, and 10 are remote from any settlement earlier than medieval.

Dating the Mounds.

1. An analysis of finds reported from Site 1-30 above reveals:-

- a) Microlithic artifacts at 7 sites.
- b) Stone axes etc. at 5 sites.
- c) Mealing stones etc. at 9 sites.
- d) Bones at 4 sites (including cattle at 2 sites, human bone at 1).
- e) Pottery at 8 sites.

We may comment on a) and b) that they indicate a general date: neolithic - post-neolithic - pre-medieval A. The pottery includes a neck of coarse red ware and pottery of definite "neolithic facies" in coarse grey ware (Foote). A heavy lug from No. 5 is illustrated in IPPA, as is a sherd from No. 6 of incised ware. All these finds appear to be of ware comparable with the Raichur A wares. At No. 9 Woolley reported a sherd of hand-made black ware and noted that "Grey wares predominated", whilst at No. 1 the same authority found typical B ware sherds. We may conclude that the pottery finds reported appear to indicate neolithic and post-neolithic dates.⁴⁹.

The finds thus listed suggest that the mounds from which they came were in some cases in process of accumulation in the neolithic period, and in others during the post-neolithic to pre-medieval A periods.

2. 'Ash' (presumably originating elsewhere) is reported on

graves at 6 sites. The dating of these graves can be fairly confidently stated as post-neolithic to pre-medieval A periods. At No. 29 Mahadevan reports "There is a stone circle consisting of huge boulders of gneiss and trap rock on the top of the mound. This circle appears to come within the range of megalithic monuments of the area, and is thus amenable to a similar dating. We may thus conclude that certain mounds had already assumed their complete dimensions by the pre-medieval A period at latest.

3. The argument for a late (Medieval) dating for two of the mounds (Nos. 9 and 15) was advanced by Sewell.⁵⁰ It was based upon the proximity of Vijayanagar or the main highways leading to the city. Analysis of Sites 1-30 suggests however, that no less than ten are in close relationship to known neolithic settlements and thirteen in all to post-neolithic settlements. As the total number of these settlements is very small the probability of such proximity is therefore much more significant. Further, Sewell himself agreed with Foote that a number of the mounds were of neolithic origin.⁵¹

These three considerations lend overwhelming support to the implications of Subba Rao's finds, and to the earlier conclusion of Foote⁵² that many of the mounds are of neolithic origin. They further suggest that the social environment in which the accumulations was possible continued into the post-neolithic period and probably came to an end during the pre-medieval A period.

Purposes or Origin of the Accumulations: existing theories.

Subba Rao⁵³ summarises the theories so far produced to account for the ash accumulations, and before proceeding, it seems necessary to discuss them. There are three main theories for their origin: 1) Funerary; 2) Zariba and 3) Slag from some sort of primitive industry.

1). Funerary. This theory was maintained by Sir J.J. Modi,⁵⁴ who related them to prehistoric mounds in a wide area of the Middle East and Europe. Sewell further supported the theory⁵⁵ and associated them with medieval sati.. The local tradition which relates the mounds near Vijayanagar with the pyres of Hidimba and Vālī and therefore with the whole Kiskindha episode of the Rāmāyan is interesting but does little to support the theory.

There is one line of argument which seems to dispose of this solution that within the dating period now assigned to the mounds, and indeed in the subsequent historical periods, many varieties of burial customs are now known and they conform with burial customs throughout the world in that some sort of funerary deposit forms the central feature around which a monumental design is constructed. The ~~ash~~ mounds, and even less, the cinder camps, do not conform in any way to the graves now known from the neolithic or post-neolithic period, nor indeed from any graves so far discovered in or outside India.

2). Zariba. Foote first advanced the theory that the cinder camps might have an origin similar to the mounds of cinder which Stanley mentions as surrounding the Zariba or thorn fence of a village in Albert Nyanza.⁵⁶ If this is so then the cinder must have originated from the combustion of cow-dung. This theory has been generally discounted by recent writers who point out⁵⁷ that the actual composition of the mounds, built up on prepared platforms etc., seems to preclude the possibility. There are, however, several further considerations suggested by analysis of the evidence now assembled, the results of excavations at Piklihal, and Zeuner's recent researches. We shall return to the theory below.

3). Slag. In connection with No. 15, Dikshit⁵⁸ identified the ash with slag resulting from the primitive working of iron. In this he agreed with Woolley who wrote that one mound "was actually an early ironworks. There was plenty of iron slag, which I had chemically tested".⁵⁹ It appears that Yazdani had already reached similar conclusions for he wrote: "In the opinion of the Archaeological Department (of Hyderabad) the ash mound (Gaudur) marks the site of some old iron or gold smelting factory".⁶⁰ It is strange that neither Foote nor Munn, both of whom collected or reported iron slag at many other sites, reported finding it on an ash mound. Iron slag is an almost universal find at settlement sites in the area, and its absence in the ash mounds of Gulbarga was expressly noticed by Mahadevan.⁶¹ Nor were limonite nodules

associated with iron working at several sites in Raichur, found or reported in any case. The dating of the mounds now advanced militates against an iron industry, whilst finally in not one of the published analyses of specimens at present available is iron present in such quantities as to support the claim. Similar objections may be raised for copper and gold working. Thus we may perhaps conclude that the mounds visited by Woolley were exceptional, or that there was some confusion in the analysis upon which he based his conclusions.

The theory that the mounds resulted from glass-manufacture was raised and disposed of by Munn.⁶² The evidence for this industry is discussed in Chapter X and seems to preclude the possibility. Newbold in his account of the Bellary Mounds tells how he rejected, by practical observation, the possibility that the ash was formed from the manufacture of brick, lime or pottery, in addition to iron or glass.⁶³

In default of any of these industries and quite apart from the disparity of dating and techniques of any one of them, it remains for the protagonists of this theory to supply a more likely candidate.

The Composition of the Mounds.

No. 15 was described by Foote and Cole and finally excavated by Longhurst.⁶⁴ We may summarise the results thus: the mound rests on a circular platform of mud and gravel, about 2' high. Over this there are alternate layers of "ashy"

made ground mixed with fragments of calcined bone, celts and mealing stones, and slag like cinder 2'-4' thick.

No. 1 was first noticed by Newbold and later reported by Foote, Sewell and Fawcett.⁶⁵ We may summarise the results thus: the vallum had a perpendicular inner face and sloping outer one. The base of the mound was a platform of gravel on which rested a layer of dark earth. Above this was a layer of ashes of about 5' depth and above this a banded layer of about 4'6" thickness of ash and darker earth.

No. 17 was photographed by Munn and a part of the section noticed.⁶⁶ The mound consists of a regular series of alternations of ash (2'3" thick), pinky brown earth (3" thick), ash (12" thick) and layers banded with charcoal and containing stones and a potsherd (2'6" thick). The evenness of the layers is at once apparent in the photograph. (Pl. 43 is a sketch based upon Munn).

We may conclude that these examples indicate a cycle of three processes: the preparation of a platform, the accumulation of the ash material, a period of levelling or small scale occupation, a fresh accumulation of ash etc.

Objects contained in the intermediary layers.

We may summarise the objects reported from the mounds either as surface finds or particularly from the intermediary layers. They include mealing stones, hammer stones, saddle querns; occasional finds of neoliths or microliths;

occasional finds of pottery; a small number of bones of cattle, rodents and a single human bone; and in a single instance (No. 29) mud balls of about 2" in diameter.⁶⁷

This assemblage seems to coincide very closely with the detritus of human occupation at Piklihal, Site VII, and it leads towards the conclusion that the intermediary layers do in fact represent some sort of occupation, probably of a temporary character. A new consideration arises from analyses of samples taken from the "brownish layer" at No. 1. Zeuner has recently analysed these specimens and found that the soil was almost certainly sorted by wind, and that moreover its humus content was considerably higher than that of the accompanying ash layers. These two indications suggest that at the stage when the brown layer was formed the ash formation was interrupted, long enough for wind to play upon the ash and vegetation to cover the mound. This stage subsequently gave way to one in which ash was again formed.

Analysis of the Ash.

Bosworth Smith obtained an analysis of a specimen from No. 26. This may be compared with a second analysis, by Foote of ash from the same source.⁶⁸ Recently Zeuner has analysed specimens from No. 15, and found that the composition is "substantially similar" to the earlier results, in that more than half of the material consists of silica and that the amount of heavy metals present is much too small for slag produced from industrial metal working.

Foote also discovered some fragments of ash which showed impressions of "coarse straw-like that of the great millet".⁶⁹ Zeuner has now obtained a series of micro-photographs which demonstrate conclusively that the ash contains traces of grass. He has also made a chemical and microscopic analysis of both ash mound specimens and satisfied himself that the ash mounds are really burnt cow dung. Foote had already hazarded this explanation in connection with the 'Zariba' theory.⁷⁰ (The results of Zeuner's researches are not yet published, but he has kindly given me the conclusions reached for inclusion at this stage).

Local Traditions to account for the mounds.

No's. 15 and 9 are associated with the Rāmāyan, Kishkindha episodes of the deaths of Hidimbāsura and Bālī. This has been used to support the theory of funerary origin. Subba Rao⁷¹ notes that 1 and 2 are locally known as "Kolimi dibba" or slag mounds, Kolimi being used in Kanarese and Telugu as a smithy or furnace. The more common names for the mounds seem to be those whose first member is "būdi" (ash in Canarese, compare Tamil 'putu'), occurring in such forms as budi -matti, -hālu, -gunta, -betta etc. A curious legend is associated with No. 19, that the mound is the "original site where old shepherds used to pound their cattle and where fire was burnt in the night to keep off wild animals."⁷² A somewhat similar tale is recorded by Subba Rao,⁷³ that No. 16 is called nānri avula gattu because of the tradition that cows

were burnt there.

It appears to us that the legends told of 15 and 9 are the ascriptions of pious vaishnavites. The legends told of 19 and 16 seem to offer a more possible source of genuine folk memory. Both associate the mounds with cattle, in one case with burning of the animals, but in one case with their empounding.

General Conclusion: The Zariba Theory and the Holi Bonfire.

The Zariba theory was first advanced by Foote⁷⁴, who noticed a reference in Stanley's 'In Darkest Africa' to the practise on the Albert Nyanza. Here great quantities of cow-dung were piled up in circular mounds outside the Zariba or thorn fence around the cattle pound. Foote concluded that if such mounds chanced to take fire they would produce something not unlike the cinder camps.

An explanation of the theory in its Indian context requires two questions to be answered: What was the social environment which gave rise to the accumulation of large quantities of cow-dung at the sites listed above? and: What caused the burning of the dung?.

The Raichur neolithic culture was, as we have shown, largely pastoral. As such it may be compared in many features with the pastoral Bantu of the E. African scrub and velt. The cattle kraal among such peoples is often a centre of village life, and in Africa cattle and often persons of dignity are buried in it or under its fence.⁷⁵.

Another feature which the Bantu tribes share with the Toda pastoralists of the Nilgiris is the seasonal migration of the cattle herds to suitable grazing at a considerable distance from the settlement. Among the todas such grazing spots often include a semi-permanent settlement and play an important part in the ritual life of the tribe.⁷⁶ Further among the Todas the dried dung plays an important part in all house and dairy cleaning rituals, and as such its sale is forbidden.⁷⁷ Under these circumstances we may accept the ash mounds as indicating large accumulations of cow dung at the cattle pounds either near the settlement or at tribal grazing grounds. Such a hypothesis can scarcely be objected to on the grounds of quantity as a rough calculation brought the number of cattle responsible for one of the largest mounds yet reported to a figure of the order of two hundred (over a period of 25 years).

We may now turn to the second question: How was it that the cow dung mounds were fired? That their combustion was intentional may, I think, be inferred both from their number and distribution, and from their complex stratification. The Todas who regard buffalo dung as of ritual importance evidently regard its combustion as an evil, as is shown by the story of the buffaloes who cursed the seven heaps of dung which the priest of the Ti dairy wished to sell.⁷⁸ We have as yet no clear indication from modern ethnography, either in India or outside, to suggest a reason for the conflagrations. There are, however, a number of slight facts which may throw some

light upon the process. Ash, and particularly cow dung ash, is regarded as holy by many hindu sects: thus the Brhat-jabāla-upanisad and the Bhasma-jabāla-upanisad recommend the application of ash as a symbol of S'iva, whilst the word vibhūti originally meaning wealth, becomes a synonym for ash. It is reported that in parts of Mahārāstra cow dung is stored, in spite of its market value, by certain castes, and the Holī Bonfire is made of it. The ash of the Holī fire, linked by learned tradition with S'iva's slaying^{of} the Love God, is used for application to the limbs. Holī is a first fruits festival associated also with coming of spring and therefore love. The only possible explanation of the firing of the ash seems to be some equivalent festival to Holī. Again the storing of cow dung for Holī bonfires is expressly mentioned in Bengal, Mukherji writes "The Holī bonfire is regarded as a sacred object; every family residing in the neighbourhood..., considers it its duty to contribute something - ... logs of wood or cow dung cakes ~~for~~ fuel."⁷⁹.

This theory is open to serious objections, not least that no clear survivals of the rite are found in the area, but it seems reasonable to account for the passing away of the custom in the pre-medieval period when the population had risen, the area of cleared ground provided less grazing and also less scrub land to yield fuel, and the increased domestic call for cow dung fuel became apparent. It is, however, strange that all memory of the mounds should have been effaced, and that

the Holī bonfire is often considered as foreign to the Kannada region, although I did notice several large bonfires on the occasion which, in Raichur, is certainly a time for cattle markets, melas, bullock races, and general festivity.

CHAPTER VII: NOTES AND REFERENCES

1. Foote, I.P.P.A. pp.27-8.
2. ibid p.28.
3. Analysis of these specimens could provide valuable support I was unable to bring any to England, and it is to be hoped that the Hyderabad Archaeological Department will carry out this important task.
4. A.I.4. Pl. CXXI.1.
5. I.P.P.A. Pl.37, No.837.
6. Jerdon, T.C. The Birds of India, 1864, Vol.II.Pt.2., pp. 536-41.
7. Seshadri, M. loc.cit. 1951. p.90, p.103 etc.
8. I.P.P.A. p.80.
9. See Pl. 4 for the modern distribution of millet and wheat. The appearance of millet in the 40" minus rainfall zones is very striking.
10. Subba Rao, loc.cit. 1949. pp.160-1.
11. Lal, B.B. J.R.A.S.B. XV No.1. 1949, "The Chalcolithic Phase in S. Indian Prehistory.
12. Seshadri, loc. cit. p.120-124 argues against Lal's use of Chalcolithic.
13. A.I.4. p.267 (o)3.
14. I.P.P.A. p.21.
15. Subba Rao, loc.cit. 1949. pp.142-5.
16. I.P.P.A. p.IX.
17. Subba Rao loc.cit. 1948, p.35 and Pl. XXI, 7 & 8.
18. The use of the terms 'axe', 'adze' etc. is discussed in the Introduction. Whilst it may be argued that they are not proven, there appears to be ample circumstantial evidence to support them.
19. Subba Rao, loc.cit. 1948 p.38-9.

20. Movius, H.J. Early Man and Pleistocene Stratigraphy in S.E. Asia. p.101-2.
21. Seshadri, M. loc.cit. p.90, 103 etc.
22. Leakey, L.S.B. Stone Age Cultures of Kenya Colony, p.105 and Pl. XVII.
23. Subba Rao, loc. cit. 1948, p.41.
24. I.P.P.A. p.24.
25. Subba Rao, loc.cit. 1948. p.40.
26. Gordon, D.H. J.R.A.I. LXXX, 1950 p.62.
27. A.I.4. pp.268-9.
28. Rea, A. loc.cit. p.3.,
Breeks, J.W. loc.cit. p.24.
29. Subba Rao, loc.cit. 1946. pp.161-2.
30. Indeed Marshall himself abandoned the idea in Mohenjo Daro and the Indus Valley Civilization, pp.542-3 and p.677.
31. Haimendorf, C.vonF. 'New Aspects of the Dravidian Problem', International Congress of Anthropology and Ethnology, Vienna, 1952.
32. Haimendorf, C.von F. Man, 1948, No.99. Culture Srata in the Deccan.
33. A.I.4. pp.202-3.
34. For example Breeks, loc.cit. p.19-27 notices this type of variation among the Todas.
35. Foote, R.B. Catalogue Raisonne, 1914 Nos.2783-87.
36. Sankalia, H.D. J.B.B.R.A.S.XXVII Pt.1, p.102-3.
37. Notes made by the writer whilst visiting Poonah in 1952.
38. In a letter to the present writer.
39. I.P.P.A. pp.32-3.
40. Marshall, loc.cit. 1951. Vol.2. pp.484-5.
41. A.R.A.S.I, 1913-14.

42. Goswami, K.G. Excavations at Bangarh p.32.
43. A.S.A.R.(S.C.) 1905-6 p.2.
44. De Terra, H. Studies in the Ice Age in India, pp.334-5.
45. Marshall, loc.cit. 1951. Vol.2. p.484.
46. Gordon, D.H. A.I.6. p.70, 78 etc.
47. Subba Rao, loc.cit. 1948 pp.23-6.
48. Subba Rao, loc.cit. 1949 p.126 and p.217.
49. It is perhaps noteworthy that Foote frequently recognized the A wares as "Neolithic" and the B wares as "Early Iron Age". Likewise Sewell made a collection of sherds (now in the Indian Section of the V. and A. Museum) which included typical spouts, rim forms and perforated sherds. These came from the Bellary hills, and he described them as "Neolithic".
50. J.R.A.S. 1899 p.16.
51. ibid pp.13-16.
52. I.P.P.A. pp.92-4.
53. Subba Rao, loc.cit. 1949 pp.214-7.
54. Modi, J.J. Journal of the Anthropological Society of Bombay XIV No.7.
55. Sewell, R. J.R.A.S. 1899 pp.3-7.
56. I.P.P.A. p.94.
57. Subba Rao, loc.cit. 1949 p.216.
58. Dikshit, K.N. I.S.C. 1940.
59. Woolley, L. J.R.S.A. 1940 p.191.
60. A.R.H.A.D. 1936 Apx. A. p.20.
61. Mahadevan, C. A Note on the Archaeological Finds etc.p.14.
62. J.H.G.S.II Pt. 1. p.129.
63. J.R.A.S. VII. p.132.
64. Foote, R.B. J.R.A.S.B. LVII p.272;
 Cole, R.H. M.H.L.S.VII pp.130-3;
 Longhurst, A.H. A.R.A.S.I. 1912-13, p.145.

65. Newbold, J.R.A.S.VII p.129;
Sewell, J.R.A.S. 1899 p.7.
Subba Rao, loc.cit. 1949, p.211.
66. J.H.G.S.II pt.1. Pl.XVIII, Photo 27.
67. ibid p.128;
I.P.P.A. p.94;
Mahadevan, loc.cit. p.14.
68. J.H.G.S.II. pt.1. p.128.
69. I.P.P.A. p.80.
70. ibid p.94.
71. Subba Rao, loc.cit. 1949, p.77.
72. J.H.G.S.II pt.1. p.79.
73. Subba Rao, loc.cit. 1949, p.213.
74. I.P.P.A. p.94.
75. Schapera, I. Bantu Speaking Tribes of S. Africa p.248.
76. Rivers, W.H.R. The Todas:- many references.
77. ibid p.227-8.
78. ibid p.227-8.
79. Mukherji, A.C. Hindu Fasts and Festivals p.45.

CHAPTER VIII.

THE POST-NEOLITHIC CULTURE

CHAPTER VIII.

THE POST-NEOLITHIC CULTURE

I. We have given this culture this name because it is curiously vague and will be seen to overlap in a general manner with the pre-medieval culture, not only inside Raichur but throughout the southern peninsula. We have accepted for the distinguishing feature of the culture a predominance of red-and-black (B1) ware, whilst in the following period the same ware is modified to give a predominance of red ^{of} or/black (B3) ware (more often red). By taking this criterion we follow closely upon Wheeler's division at Brāmagiri and Chandravalli into ^{1.} Megalithic and Andhra periods. It is necessary to stress, however, that the so-called 'Andhra' painted ware (our B2) is not taken as a sign^a for the change from Post-Neolithic to Pre-medieval culture even if it could be proven to follow this change in Raichur and Bellary. It will be shown below that the Andhra influence brought other and more distinct features to the district, whilst the painted (B2) ware appears to be a local peculiarity of the Kannada region and therefore should not be used in the wider connotation of Andhra.

This ware (B2) is even less suitable when the relationship of the cultures to that of the Tamil plain is at question.

Thus the two periods now to be discussed are distinguished from the point of view of the commonest pottery by a majority of B1 or B3 wares, whilst B2 ware appears in general to coincide with the predominance of B3 ware.

We shall discuss the evidence for the nature of the change from Neolithic to Post-Neolithic culture, when considering its dating and extent below.

1. The Settlement.

For the reason stated above it is not easy always to determine whether the first occupation of a site occurred in this or in the subsequent period. Nonetheless careful study of the materials available, and the present writer's own observation, reveals 15 certain settlement sites and 6 further probable sites. All of the settlements occupied throughout the Neolithic continued to be occupied during this period whilst a number of new sites appear. The finds of iron slag reported at a number of sites, including some very small ones, suggest that some at least were specialised settlements. The following sites are thus included:- Certain: Nos. 4,7,17,21,30,36,38,47,51,

57,68,70,80,91,94, Probable:- 3,24,43,62,77,90.

Of the Neolithic settlements there is evidence for an increased area of occupation, still apparently of the same scattered nature both upon the slopes of the hills and also around the foot. At No. 7 the expansion seems to have been around the base of the hill. At No. 30 it was both around the foot of the valley and upon the level area to the north of it. At No. 47 there seems to have been extensive settlement S.E. of the Asoka Edict, at the foot of the hill and broad levelled areas. At No. 57 there is already trace^s of a concentration of the village area into the E. side of the saddle. (Pls. 22, 37a, 40, 38b).

Among the new settlements it is noteworthy that three lie in the so far unsettled eastern section of the district. Nos. 43 and 77 seem to have been tiny settlements on levelled ground at the foot^{on} on the slopes of rocky hillocks. The settlement at No. 80 is unique and gives every topographical indication of being rather of the subsequent period. It will be described, therefore, in that context. In the west of the district the most important new settlement is No. 36. It is indeed strange that in my extensive explorations at this site I did not encounter any evidence of Neolithic occupation. The main settlement seems to have been in the area N.W. of Malimal-

appa hill. No certain traces of Post-Neolithic settlement were found near the modern village of Kopbal. Most strange is the absence of any trace of early settlement in the vicinity of either Asoka edict. Nos. 3, 4, 24, 62 and 90 see all to have been tiny settlements beside or on rocky hills, whilst 21 seems to have been, rather an offshoot from the main Manvi site although the surface collection did not make this clear.

There remain two interesting new sites close to the Tungabhadra and both in the area of the Benkal Forest. At No. 70 and 94 there was extensive occupation of a large series of caves, sometimes associated with levelled ground, and small platforms.

We may conclude from these sites that the post-neolithic settlement either was merely a development of the already existing one, or was otherwise a settlement on exactly the same lines as it. Nearly every case quoted shows this process. The extension of the area of occupation is likewise a continuation of the same type of settlement as the Neolithic. This is nowhere more clearly shown than at Piklihal, where the Neolithic gives way to Post-Neolithic occupation of the small saddle, Site VII. It is probable that the areas A, B and C were likewise used, whilst it appears that two small new settlements occurred in the adjoining hills at the areas J and K. (See Pl. 45).

There is little evidence either from Piklihal or the other excavated sites to suggest that the style of house changed in this period, and in this respect also the Post-Neolithic settlement must be regarded as a direct development of its predecessor. The process at Piklihal is clear in the section of Site VII (Pl.51).

The evidence of the excavations suggests that the house continued to be a wooden structure with wattle and daub infilling and probably (although the evidence is negative) a thatched roof. The only suggestion of change is of a greater use of stones to reinforce the bases of the walls. It appears from the excavation of Site VII that the house was rectangular. In one corner, either inside or close to the walls, was a rectangular saddle-quern. The fire was augmented by a stone surround in one case, but was found also without this. The fire-place had a rough tripod made of 3 little triangular shaped stone posts set up in its midst. The small quantity of detritus found of the floor levels included discarded microlithic blades and sherds of typical wares. In one case a great storage jar was found sunken into the floor beside the hearth.

It is perplexing to notice that 53 grave sites, ascribable to this period, are known in the district.

These range from single graves to groups of several hundred, yet in many cases it is still not possible to locate the settlement sites associated with these graves.

2. Food.

There are, at present, very few facts which indicate the food supply in Raichur in Post-Neolithic times. Indeed, it can be safely assumed that the economy of the previous period continued in much the same form. The only local material evidence suggesting the domestication of the buffalo comes from a later period, but outside the district there are several cases of metal models of buffaloes occurring in graves of comparable period, notably at Bowenpalli^{2.}, and at Adichanallur^{3.}. The latter site^{4.} provides further evidence for the keeping of fowls, and it seems reasonable to assume that this was common to both the Tamil plain and the Kannada region. An interesting feature of the Tamil plain culture is provided by the discovery of husks of rice and millet in the urn-field at Adichanallur^{5.}, (see below p.553) and it is also possible that the bringers of the new iron technology to Raichur may have brought also the small scale cultivation of rice, although the climate of the district makes the growth of millet the natural main cereal crop today.

The new iron tools made possible the efficient preparation of stone slabs, by the process to be described below, and these slabs seem to have been used in this period not only for cist graves, but also for the re-enforcing of the sides of small surface drainage tanks. The more efficient quarrying of stone blocks, made possible with iron cold chisels and crow-bars, may also explain the much larger scale of the stone terracing that is attributable to the period. Tanks occur at three sites that leave no doubt of their age. At site No. 6 a natural hollow in the rock has been enlarged by a bank of rocks and earth at one side (see above p. 125 Ch. IX). At No. 36 there is a similar tank on the level grave area on top of Malimalappa hill (Pl. 12b) (see above p. 142½ Ch. IV), whilst at No. 73 no less than 3 small tanks, with their bunds lined with thin slabs of gneiss were noticed (Pl. 20B, see above p. 130 Ch. IV). Each of these tanks was associated with 'megalthic' graves, and not probably used for agriculture. It is also noteworthy that in each case they lie high above the plain on small plateaux. At both sites 6 and 73, however, much larger tanks exist, or have existed, at the foot of the hills immediately below the graves, and although there is no evidence for their being contemporary with the smaller ones, it seems probable that they may be on sites of earlier tanks. At No. 47 a large earth bund was noticed on the level hill top near the Malikārjuna

temple, and a smaller stone built dam across an erosion nallah, associated with stone terrace walls existed in Sultan Mohammed's Field at a date prior to the urn burials (above p.171). In addition to these sites a number of megalithic grave sites were found to be close to modern surface drainage tanks. An example of the extensive use of stone terracing is afforded by site No. 49 where some of the graves, built at the upper end of a depression, are actually located on 'made ground' forming part of an extensive series of contour terraces running right across the grave area, and down the depression to anallah which bears traces of an ancient dam now breached (p.178 Ch. IV). At Piklihal it was noticed that the system of stone-wall contour terracing was still in use to create small fields of rich black soil. It appears that this system is identical with that already discernable in the Neolithic period at Piklihal, and the sites mentioned above as having field terraces or dams are only a small number of those at which such features may be found. In many other cases the dating of the remains is less certain. In general it does not appear that any of the cases quoted above would make possible a sufficient irrigation to grow a rice crop, and it seems likely that this was not possible in the district in the pre-medieval period, and only became so in those areas that were affected by the large scale canal and anicut irrigation to be mentioned below.

It seems certain that the cultivation on the small terrace fields, probably mainly of millets, was still a hoe cultivation and this fact is supported by a study of the iron tools which characterise the culture. The flat banded axe could be also mounted cross-wise and used for a serviceable hoe in exactly the same way as its Neolithic counterpart. The flanged 'spade' could also be mounted as a hoe or 'kudālī'. The sickle is obvious, whilst the small spud has a wide range of possible uses. The only remaining problem is the use of the plough: it seems likely that so long as the small terraced field was in vogue, this remained out of general use.

3. The technological basis of the culture.

From the view point of technology the period is marked by the first common use of iron in the district. The evidence of the excavations at Pikāhal is too limited to produce a statistic but it appears that stone axes continued as in the earlier periods. Thus the two techniques must have flourished side by side, and there is as yet no means of knowing whether or not the iron implements were reserved for a new people, whilst the stone continued as the property of the older inhabitants. It does, however, seem certain that iron-using and-making casts must

have migrated into the district from outside. As will be pointed out below, there is an extraordinary uniformity of types throughout the iron industry of the entire peninsula. The industry revealed by these types will be termed the Southern Iron Industry to differentiate it from the Northern Industry which provides a marked typological contrast with its neighbour. It is not as yet possible to say when steel, which was known in the Northern Industry in the early centuries B.C. - A.D.⁶, and which was later one of the famed products of the Deccan, became known in the Southern Industry as none has yet been identified.

a) Iron. Raw Materials. As has been noticed in Chapter I, in Raichur, the main deposits of iron occur as layers of haematite or magnetite in bands exposed in the Dharwar schists. The iron content is generally in the region of 40%.⁷ The bands consist of alternations of quartz and the iron oxides.⁸ Munn notes⁹ that the "old workings are invariably situated in the zones of intense crumpling and contortion"; presumably on account of the resulting fractures of the silicates, and the considerable easing of the extraction of the ferruginous matter. The deposits vary considerably in nature and in some cases occur in the form of ochreous haematite as "a loose debris into which many pits have been excavated by the villagers. The ochre is utilised for painting walls of houses."

Another source which seems to have been widely exploited in antiquity is the gravels of the Krishna river which contain nodules of haematite and limonite, having presumably a common origin with the chalcedonies and silicates of the same deposits whilst the moorum resulting from the disintegration of the gneisses is itself an even more common source for small scale extraction of nodules of limonite and haematite. It is, perhaps, surprising that on none of the major ferruginous bands is any site of undoubted antiquity. Munn noted this fact, in so much as the sites of old workings on the Kushtagi band seemed to relate only to the Vijayanagar and Adil Shahi period.¹⁰ Another indicator is the presence of concentrations of nodules of limonite, originating in the other sources, at numbers of ancient sites. This seems to leave little doubt that such nodules were in fact those anciently exploited.

Note. These conclusions seem to agree with the practise of the modern Agaria and Asura miners of the C.P., described in the Gazetteers of the relevant districts, and usefully summarised by Elwin.¹¹ The same author¹² describing the mining process quotes a private communication from Dr. C.S. Fox: "Except in very few cases the material used in the Agaria furnaces is some form of haematite or magnetite which occurs in association with lateritic rocks

or is to be found in weathered exposure of other rocks. In many cases the ore is a partially de-hydrated limonite. It is a remarkable fact that the massive steel grey haematite which occurs on immense deposits in some places is not used although limonite pockets in them might have been scraped out and this inferior material smelted." Thus the lateritic sources, particularly from small pits excavated for the purpose, provide the bulk of Agaria iron. Elwin gives further analyses of ores from various Agaria mines.¹³ Cammiade, describing the iron working of another tribe, the Kois of the Eastern Ghats, notes that until recently, this tribe obtained its raw materials locally. Another source of ore exploited by the Kammara of the Telegu country was the iron mountain, Jambunāth Kondā, near Hospet. The ore was brought to the smelting places by pack bullock. Recently this traditional trade has been replaced by the modern industry and local smelting abandoned.¹⁴

Iron Technology.

Little certain evidence exists for the actual working of iron in ancient times. There are, however, a few pointers that are not altogether without interest.

a) The place of smelting. The presence of iron slag at many sites has been generally taken to indicate smelting. In particular it has been suggested¹⁵ that the tops of small hills may have been used for this purpose. At Kallur

masses of slag were found on the level top of Yammiguda hill, above the little tank at the foot. At Site No. 62 slag was again found in some rock caverns near the top of a small hillock. In Bellary, Subba Rao found similar sites (p. 100 above). At Piklihal, the present writer found several accumulations of slag, and also quantities of limonite nodules. These places conformed well with a pattern that the previous references, and the finds at Shivapur South support. Two heaps were found on the outskirts of the main settlement area whilst two more were found in the little valleys which intersect the rocky hills to the north. Of these the eastern may be described. The valley narrows down to about 15' and reaches its highest and narrowest point. This spot marked the accumulation of slag. A number of largish caves lay nearby in the rocks. (See Pl. 45, SQN). The western example lay at one side of a wider valley, and at one side of a natural rock shelter. Both the other places were also at the foot of rocky hills. At Shivapur South site the furnaces were at the mouth of a great cave, in a natural courtyard flanked on three sides by high rocks. At Chandravalli Krishna found traces of smelting in several caves (above p. 95).

b) The apparatus. The furnaces noticed at Shivapur have already been described (p. 395). They resemble closely examples given by Elwin among the modern Agaria and by Cammiade among the Kois.¹⁶ A still closer resemblance is

with the modern example illustrated in Hunt's "Early History of Steel".¹⁷ The leaf shelters in these illustrations are accounted for by the wide-spread belief of the Sun's injurious effect on smelting.¹⁸ The only other objects found are the clay truyeres. Fragments of these and even whole specimens were found by Foote at several sites in Bellary and Mysore.¹⁹ Krishna found them in excavations at Chandravalli, in probable Satavahana context. And many fragments were noticed in the course of exploration in Raichur. A complete specimen from Chandravalli is illustrated, sketched (Pl. 107) in the Department of Archaeology, Mysore. Munn illustrates a specimen of very similar size from Watgal.²⁰ The system of the bellows cannot be recovered, as the parts must have been of wood and leather.

c). The system of Extraction. There can be little doubt that in the beginning the process must have been that known as the Direct or Semi-Fusion method. Neogi notes that this method still prevails in Orissa, Chota Nagpur, C.P., Baroda, the Deccan and Carnatic and N.W. Provinces where it persists among such primitive iron smelters as the Agaria and Kois. Excellent accounts of their method are found in Cammiade²¹ and Elwin.²² Before we consider this system, it will be interesting to notice that which early English travellers noticed as being in vogue in Orissa and S. India. Neogi²³ summarises the

observations of Heyne and Buchanan in these words: "The rationale of the process is as follows:- Only the richest ores of iron are employed, as the fuel as well as the reducing agent is charcoal. The blast furnace consists of a hearth with a circular shaft or chimney from 2 to 6 feet high and 2-3 feet broad, and the blast is admitted with a hand-bellows through a hole. As Charcoal is a much purer form of carbon than coal, the iron produced by heating the ores with charcoal is exceedingly pure. No flux seems to have been used. The malleable iron thus obtained directly from the ores is hammered in the hot condition in order to make the iron solid and homogeneous. The iron slag during the process of heating is tapped off from time to time through another hole or tuyere, and the adhering portion squeezed out during hammering. The iron seems to have been obtained as lumps and not in the molten condition".

This description almost exactly follows the process observed by Elwin among the Agaria. Elwin, however, found that the ores used, and indeed favoured, were not the most pure.²⁴ He notices that the process is without any flux, although there are abundant supplies of limestone in the vicinity.²⁵ That flux is entirely unknown to the Agaria is strange as the ores are of a highly refractory nature, and the first process of extraction is long and hard. In Raichur lime could have been easily derived from the Kankar

under the black cotton soil. It appears that the absence of a flux is the fundamental of all ancient Indian smelting. The resulting process calls for the removal of impurities by reheating and hammering the spongy bloom,²⁶ and this results in a high loss of ore with the slag that typifies the primitive system of extraction. The fuel must have been charcoal throughout. Elwin gives a clear account of the process. The furnace is a short cylinder open at the top. There is an opening at the bottom for the bellows, and often another for raking and removing the slag. The operation divides into four parts. The first three are mainly women's work, the fourth is men's. First the charcoal, chaff, crushed ore, receptacles full of water and tools are assembled and the smelting site swept.

Next the furnace is prepared. At the bottom is laid the Kodon chaff and next the charcoal. The tuyere has already been rested upon a low wall of damp sand and the remaining hole is blocked with similar sand. The chaff is called the throne (*āsana*) for the iron god (*Lohāsura*). The furnace is now filled to the top with charcoal and the second stage is complete. The women now retire to sleep as the final stages are usually done in the early morning. At dawn the women light the fire and when the whole is heated pour the crushed ore on to the top. The ore is often fed from a bamboo platform or hopper (*machān*). From time to time the 'excreta' (*gū*) are removed with a wooden rake.

Finally the time is reckoned ripe to remove the bloom. Now a man takes over for the first time and lifts it with tongs. The embers are raked level by a woman who adds a basket of fresh chaff, and the glowing bloom is replaced for a short time onto this throne, no doubt to assist carbonisation.²⁷ The hammering is very long and exacting. The tools generally used are iron hammers of various sizes, tongs and stone anvil. Finally the iron is ready to be hammered into a tool (of wrought iron).²⁸

A puzzling fact is the absence of iron hammers or tongs from the representatives of the southern industry. These tools are among the much smaller bulk of northern industry types, and it is legitimate to suggest that their absence is an indicator of the primitive condition of the post-neolithic iron industry in the south. In this context it is interesting to note that certain primitive tribes have conducted their iron industry without the use of tongs or hammers. Thus in the Southern Sudan green sticks were, until recently, used as tongs,²⁹ whilst in India, Hutton reports that the Angami Nagas still use hammers made of smooth oblong or egg-shaped stones, bound to a haft, whilst for tongs they employ green bamboo.³⁰ The mythology of the Agaria further implies that tongs and hammers came to them only after they had adopted the use of iron.³¹ The anvil is invariably of stone.

The details of this direct process seem to be clear.

They do not call for any great heat, and the ore is never completely molten. The resulting artifacts are all wrought iron, and this should be a limiting feature of the typology, as indeed it is. Charcoal is the invariable fuel. The metal resulting is iron, but under certain circumstances it is possible that something approaching steel may have been produced, unconsciously. This indeed is suggested by the comparatively high carbon content of certain iron objects analysed. Thus objects from Ceylon, dated to the 5th century A.D. had a varying carbon content rising to .9%.^{32.} Hadfield noticed that the presence in one object of "martensite and hardenite suggests the important information that the chisel was quenched". He concludes that here is definite evidence that the process of cementation was in use. The trident from Raigir was also reported on by Hadfield, who notes a carbon content of .70 and .85% . The structure of the specimen was not uniform and the content rose in one place to 1.3% and fell in another to .1%.^{33.}

The perfection of a system of steel production will be mentioned in the following chapter.

The Southern Iron Typology.

A wide range of tools and sub-types can be discerned. For the purposes of this classification I have

utilized finds, mostly from graves, which are in each case supported in their relation to the industry by the grave type and the presence of red-and-black ware pottery. Such a range is at the moment almost entirely absent in the meagre results of excavation in Raichur itself, and therefore covers the whole field of megalithic graves.

A. General Purpose and Agricultural.

1. Flat cross-banded and (?) single banded axes and (?) hoes. Find spots extend from Tinnevely to Junapani and one such axe is illustrated on a Sanchi relief.^{34.} It seems probable that the axes could have also been hafted so as to form hoes and adzes. Rivett-Carnae^{35.} notes in connection with a find of an axe at Junapani: "In this specimen as indeed in nearly all the iron axes found in central India, the bands are of iron. The tribes who used these weapons, having discovered the use of iron, and the place of the stone hatchet having been supplied and improved by iron, the ligatures of thong too have given way to iron". A conspectus of such specimens as are illustrated to scale reveals that there are three main groups: a) long (12"-15"); b) medium (about 8") and c) short (about 6"). These figures compare interestingly with the large, medium large and medium small classes of stone axe. (Pl. 107 No.1).

2. The flanged spade or (?) hoe, occurs in two sizes: a) long (about 14") and b) short (about 6"). This is another distinct type of southern tool, (Pl. 107 No.2) noted at 3 widely separated sites. The shorter pointed examples closely resemble specimens illustrated by Petrie from Pompeii, Italy, Sweden and Russia. ^{36.} The type appears also in the Greek Period in Egypt. In the light of this, it is perhaps legitimate to treat them as plough-shares.

3. The flanged hoe or spud. This somewhat specialised type of spade resembles closely a northern type ^{37.} which also occurs among the modern Agarja as an ox-goad. ^{38.} (Pl. 107 No.3.)

4. The sickle and bill hook. These are common forms which have some counterparts in the north, ^{39.} and at Sanchi. ^{40.} (Pl. 107 No.4). They occur at a large number of sites.

B. Stone-quarrying and -working tools.

5. The flanged pick-axe. The only specimen so far noted is from Guntakal and is in the Sewell Collection in the India Branch, Victoria and Albert Museum, London. The shape and robustness of the tool leaves little doubt as to its special use. (Length about 10") (Pl. 107 No.5).

6. Stone-cutter's Wedges. These wedges were first recognized by Wheeler at Brahmagiri, where almost identical tools are still in use. A further series appears at Adichanallur.^{41.} The form is very close to that of certain classes of stone axe. (Length 6"-8"). (Pl. 107. No.6).

7. Bar wedge. This curious object was noted by Wheeler at Brahmagiri as a 'bar of indeterminate shape and use'. The regularity of the size of the 4 specimens recorded (length $9\frac{1}{2}$ " - $11\frac{1}{4}$ ") suggests that they had some special use, possibly for splitting stone or wood. (Pl. 107 No.7).

8. Pointed bars and crowbars. A number of heavy bars of 2'-3' in length, and possibly also the great 'spear' of 6'2" from Brahmagiri^{42.} suggest their use as crow-bars. (Pl. 107.No.8) The modern ritual use of iron spears probably justifies its inclusion as a cult object.

C. Domestic and Wood-working tools.

9. Chisels and adzes.^{43.} These delicate instruments appear to be a specialised sub-type of the flat-axe, and correspond closely with the finely polished small stone axes. (Length 4"-6"). (Pl. 107 No.9). (Another pair occur at Guntakal and are in the Madras Museum).

10. Knives. Numbers of small straight and curved bladed knives of oval section and tanged handles are among the most ~~widely~~ widely distributed finds of the industry. (Pl. Lo7 No.10).

11. Iron tripods, The legs rivetted to the circular rest, have a widespread distribution ranging from Hyderabad to Malabar. (Pl. 107 No.11).^{44.}

D. Arms and Weapons.

12. Swords. A wide range of iron swords with straight and leaf-shaped blades, tanged and sometimes with iron handles are a common feature, large numbers coming from Adichanallur. By comparison with those so far noted from the north, the leaf-shaped blade^{45.} seems to be peculiar to the south. Such swords commonly have raised rims along the centre of the blade. One specimen^{46.} from Savandrug has a tang and guard of copper.

13. Daggers and Dirks. These correspond generally to the swords, but often cannot be distinguished from the knives. Some specimens are tanged and have a guard. An interesting example illustrated by Walhouse^{47.} from the Nilgiris has a bronze engraved handle which, whilst the blade is leaf-shaped, is clearly derived from the northern type from Sanchi etc.^{48.} (Pl. 107 No.13).

14. Spear-heads.

a) These are also most common at Adichanallur, but very scarce elsewhere. They are hollow socketed and range from long straight-sided tapering blades of 2'4" length, to curved-sided blades. ^{49.}

b) Lances with rectangular sectioned pointed blades and hollow sockets. (Pl. 107 No. 14b). ^{50.}

c) Short barbed spear heads with hollow sockets and length 3"-6". ^{51.} (Pl. 107 No. 14c).

d) Short barbed javelins with curved sides. ^{52.} (Possibly used for spearing fish). (Pl. 107 No. 14d).

N.B. At Taxila (Bhir Mound) solid iron javelins with four-flanged heads occur. The longest recorded is just over 3'. ^{53.} The whole range of spears, etc., there recorded appear to have solid tangs unless of post 1st. century A.D. dating.

15. Arrow heads. Either barbed and tanged or socketed. (Pl. 107 No. 15).

16. Ceremonial scolloped axes. Two unique specimens from Adichanallur with double angled blade attached to a back plate with holes for rivetting to a shaft. ^{54.} The use of this kind of axe was probably comparable to that of the large "phārsa" described by Elwin, who notes its use for ^{55.}

sacrificial decapitation, in addition to regular killing of animals and self defence, among the tribes who deal with the Agaria.^{56.} (Pl. 107 No.16).

E. Cult Objects (?)

17. Trident. The iron trident has a wide distribution (from Malabar to Adichanallur) and has been noticed in at least five sites. Apart from the more common Trisūla, a special type noted by Rea in Tinnevely^{57.} is in reality a Sūla having "cross pieces with bent arms at the top of the shaft only". This type (length 3'.2" and 2'3") may well include some small iron spears and pointed bars not now distinguishable. (Eleven specimens in all occur at Adichanallur, Nos. 370-374 and Nos. 380-383 in addition to 362 and 365). The Trisūla proper^{58.} has usually a rivet to hold the side prongs. In one case at Bowenpalli, a small iron model of a buffalo was attached to the shaft.^{59.} The specimen from Malabar has the remains of an iron ring in a similar position, whilst one specimen from Adichanallur has a "cross bar" at the base of the triple prongs which appears to have been a similar body to the Bowenpalli specimen. (See below p.480f) (Pl.107 No.17).

18. Saucer hook-lamps. Iron saucer lamps have a wide distribution in the southern industry, specimens occurring in Malabar and Tinnevely, Hyderabad and Junapani.

They seem to have no counterpart in the Northern Industry but a specimen from Sambhar may indicate their northern extension ^{59a.} (Pl. 107 No. 18).

19. Hooked pendants. Ten specimens occur at ^{60.} Adichanallur and probably were used to suspend the lamps. (Pl. 107 No. 19).

20. At one site a curious object of unknown use ^{61.} occurs.

b). Other Metals. Copper and Bronze. Besides the iron tools described above, the graves have yielded numbers of objects in a variety of other metals. The widest range of objects is in copper and bronze and from the Tamil plain. At Tinnevely, bronze occurred in the excavations in a ratio of 1:3 with iron objects. ^{62.} The range of types here was quite distinct and included varieties of bowls often with curious cylindrical lids, sometimes decorated, finely perforated ~~silver~~ cups, disc mirrors with tanged handles, ring stands, a tiny spouted cup (? for infant feeding, although the pattern of the modern counterpart is distinct), and a series of remarkable ~~vase~~ stands and terminals decorated with a variety of birds and animals. These objects require further

study. The peculiarity of the bronze of these objects
 is its high tin content.^{63.}

By comparison with these finds from the Tamil plain graves, the other grave sites are not so rich. Again there is an interesting grouping of objects of bronze and copper. Thus vessels of bronze (with a similarly high tin content) occur in the Nilgiri graves described by Brecks.^{64.} A further solitary example is a bronze cup (79% copper, 21% tin) from Maul Ali.^{65.} The perplexing uniqueness of the Nilgiri finds, and presence of flat mesomphalos bowls, gadrooned bowls, and concentric circles incised for decoration, makes it hard to associate the graves closely with the main series. The pottery lends support to this distinctness, and the dating of these graves must remain uncertain. A number of cow-bells have been found. The most distinctive is from Raigir^{66.} and has a banded collar of the same metal (bronze) to fit the animals neck. Similar bells of copper or bronze are reported from Khaiwara,^{67.} Narakailpalli,^{68.} and Conoor.^{69.} Other objects of bronze are reported from a wide range of sites from Mysore, Nagpur, Hyderabad, and Padakkottai. They include discs, rings, and bangles^{70.} and in one case, a remarkable ornament.

Two graves have certainly produced coins a "copper

disc with punched marks", ^{71.} and a bronze coin identified by Allan as an Eran type found by Tucker at Sular.

Gold and Silver. A number of graves have produced objects of gold or silver. The richest finds being at Tinnevelly, ^{72.} and Sutukeni, Pondicherry, where Casal in 1950 found remarkable examples of jewellery in a pot beneath the floor of a cist. From Raigir, Hunt has re-
^{73.}ported a ring of silver with gold plating.

c) The Stone Working. Many of the graves of the period employ blocks and slabs of rock, generally gneissic, but also in rare examples, within and without the district of sedimentary character. A further use for stone slabs as the lining of the bunds of surface drainage tanks has been mentioned above. These activities clearly demanded a highly organized technique and industry, and as the tools available to the post-neolithic worker must have resembled closely those of his modern counterpart - the stone-waddar - some guidance may be found in the following modern technique.

The significance of such a comparison was already clear to Newbold who in 1842 published a Note on the Process of Quarrying and Polishing Granite among the
^{74.}Indians. As a result of his geological surveys in the

Deccan he had ample opportunity for first-hand observation of this work which he realised depended upon the natural laminated structure of the gneissic rocks. Among the 'Wudras' there are three methods:-

1. "The first and most common is by the agency of fire. In this process, the surface of the base convex plateaux, or bosses of rock is covered with dry fuel, composed generally of the thorny acacias common on the surrounding plains - viz. those of Babul or Kikar - and proportioned in quantity according to the thickness of the slabs required". The fuel is then burnt until quite consumed, "when the subjacent rock will be found to have exfoliated in a cavo-convex flake, thinning off towards the edges and varying in extreme thickness from 6"-24"." The flake is the iron lever. "The separation is assisted when the granite is refractory by dropping a heavy boulder of greenstone or granite on its surface, or when heated, by the sudden effusion of cold water." A variation of this method, not noticed by Newbould, employs wooden wedges which are set in position or soaked in water causing expansion.

2. The second method, for making blocks of regular size is by bruising small holes of about 1" square and of one inch or more in depth with small chisels with highly tempered points. In the process, water is used

as a cooling agent. The blocks are then quarried with hammers and iron levers.

3. The third method is used "by the Wudras for obtaining long thin flags to cover small bridges, pavements, lintels, posts, etc." It is a combination of the fire setting and bruising method. In order to obtain a block of stone of regular size, its outline and corners are first marked by holes and then fire is laid as above.^{75.} The same writer notes that the "calorific action of the solar rays on the rock" assist in the fire-setting operation, and the hot season is favoured for the work. Thus at Devarconda in the month of June, 1839, the temperature on the rock surface was 125° F. The writer also described the "native quarriers of Bellary" as judging the quality of a stone by striking it. The more sonorous varieties being the hardest and least fissile. This method of judging the rocks appears to be universal in the Deccan and a slightly different explanation of it is also common. An old Wadder at Kopbal explained to me that the sound produced in striking the stone varied both by its quality and by the thickness of the laminations (either natural or produced by solar rays or fire). Newbold seems to have overlooked this detail.

It has been noticed above at Site No. 6 (p. 65f)

that there are no traces of drilling visible either there or at the other post-neolithic sites in the district, and that drilling when it does occur seems usually to relate to medieval or modern temple architecture etc. This appears to be true, at present for the whole of the megalithic grave area. It implies that the first method only was practised, and seems to fit well the iron tools described above. It was further suggested that at Site No. 6 the "phenominally true cleavage" described by Munn was augmented by hammering to produce slabs of the desired shape. This fact is supported by the mass of smaller blocks of rock which is to be found among the graves. The use of the chisel seems to have been rare, and the only certain case of its use in a grave of the period seems to be at Gajjalukonda where a stone slab was found pierced with a series of strait and curved lines making a pattern.^{76.}

In the N.W. extremities of the cist grave area, in Gulbarga district and in parts of Bombay, the graves are often constructed of the local sandstone. This stone is also used in the E. extremity of Raichur District. In these cases the stone was probably detached in a similar manner to the granite. Meadows Taylor^{77.} notes at Rajan Kollur: "The limestone lies naturally in laminae, which are from 1"-1' and 2' in thickness; it is therefore

easily quarried, and can be broken by a hammer or even a hard stone, into flags of any size. No surface dressing, therefore, was required and the sides and top stones (of the graves) were smooth, and at once available for use, after having been shaped to the size required.

In view of the occurrence of small tanks at a number of grave and quarry sites the need for water in the quarrying operation is noteworthy.

d) Pottery. The technology and morphology of the B1 ware have been discussed in Chapter VI. The forms are found to have a very close affinity to those of red-and-black ware from graves throughout the peninsula and to similar ware from the Town site of Brahmagiri and pre-Roman Arikamedu. The extent and dating of the ware in its wider aspects are summarily dealt with in Chapter XI.

4. Trade and Transport.

The technology suggests that iron working developed into a major trade in the area. There seems clear evidence that copper, bronze and gold working also developed. It is perhaps justifiable to assume that leather work and carpentry developed with the impetus of new tools, but there is little or no clear evidence. Pottery with the

almost general use of the wheel must have become a masculine and specialised craft, as also the quarrying of stones and possibly some part of the grave-making art. The stone terracing and small scale dam building also suggest a special trade, and it seems probable that these allied works were carried on by the ancient counterparts of the Waddars. None of these trades, however, need have involved contacts far beyond the boundaries of the local market town, and the evidence of further contacts is extremely rare. The origin of the etched carnelian beads found in the graves is by no means so limited as to imply a special trade. The find of engraved shank discs at Odogattur in N. Arcot District, in megalithic graves⁷⁸ is interesting as suggesting a trade relationship with the source of the shank and because of the similar finds at Perumbair in the Chingleput District.⁷⁹

The problem of the etched carnelian beads has been the subject of quite an extensive literature. There are, however, very few in situ finds reported, and until further evidence is to hand, little progress in their history is possible. We have, therefore, not dealt with it. The disc-cylinder-circular beads of magnetite that occur at Brahmagiri in IB and Megalithic levels and are common in post-Neolithic levels at Piklihal, and comparable levels at Sanganakallu are of interest as

closely resembling the ostrich shell disc beads that have
 a wide distribution in Africa and Arabia. ^{80.} a

There is little or no trade contact with regions outside the Raichur area. Several months of intensive exploration, and a careful survey of the objects originating in Raichur from various collections failed to reveal to the writer, anything that was of northern, Gangetic, origin, and could be assigned with certainty to the Post-Neolithic period. This problem of contacts is obviously bound up with the systems of transport, of routes and of exchange and each one of these deserves a note.

There is no clear evidence from Raichur (or outside) for the use of wheeled transport in this period, and it seems probable that pack animals played the major part in any movement of goods. The establishment of routes ^{81.} in the Neolithic period has been hazarded by Foote:

"The line of country between Lingsugur and Raichur seems to have been in great favour with the Neolithic people, for they occupied many suitable spots along it. It was probably the route between the two great strongholds now known as Raichur and Mudgal". A summary of the routes within and without the district will be suggested below (p. 516f) and the conclusion arrived at, that there is nothing incompatible with certain main lines of movement being established even earlier than the Post-Neolithic

period of Raichur.

As for the system of exchange, it must be noted that to date, finds of coins in graves, or even in their immediate proximity are strictly limited. At Sulur, there is the solitary example of a very corroded bronze coin identified by Allan as of Eran type.^{82.} At Savandurga, a single "copper disc", .6" in diameter and .15" thick was supposed by the excavator, who noticed traces of punch marks, to resemble the Mohammedan 'paisa'. The only other coins reported are Roman, or associated with Roman.^{83.}

This evidence does not suggest that the Post-Neolithic culture of Raichur area was characterised by extensive trade with civilized communities. The absence of all evidence of native coinage indicates that the culture was at that stage which Morgan characterised as Barbaric^{84.} and that such exchange as was necessary was carried on almost certainly by barter.

5. Population and Social System.

a). Analysis of the settlement sites reveals that old settlements were expanded and new villages appeared. This seems to be certain evidence that the expansion of population noticed in the Neolithic B period continued

at perhaps an increased speed. In Raichur, there are 15 certain and 6 probable settlements at present known. This in itself is an indication of increase. The grave sites are another possible means of deducing population. Unfortunately the number of burials in a single grave may vary enormously, and there are signs that the system of burial continued well into the subsequent period. It would therefore be of little value to a survey of the population to notice the actual number of graves. On the other hand as a signal of the increase it may be stated that there are over 50 grave sites. The Benkal group includes a total of about 800 graves. The Gadwal Group, at a larger number of small sites probably not over 300 in all. Compared with the enormous cemeteries reported elsewhere, over 1200 graves within 5 miles radius of Rayadrug,^{85.} 1000 graves at both Bowenpilly and at Shamirpet,^{86.} and over 400 at Begumpet - these figures are not excessive.

b). The variety of trades already noticed seems to indicate some sort of crystalization of the social unit. There can be little doubt that the iron smelting was carried on by a professional caste or group, possibly intrusive to the region. This may also be true of the work in copper and bronze and in gold. These trades strongly suggest the rudimentary development of the Pancha

87.

Brahma, Panchālan or Kammālan group of castes. The general use of the wheel for the manufacture of pottery suggests that the craft became now in part masculine and also that groups of potter-families specialised in the work. The existence of iron tools for use in stone quarrying seems to indicate the specialization of families in this work.

It is unfortunate, however, that archaeology provides no definite information on the vexed question of matriarchy. Likewise, the possible inferences of some polygamy noted in the graves at Site 6 (above p.126) are too local and too uncertain to allow for the issue to be pressed, and may rather be taken as indications of a fusion of Neolithic single inhumations and Post-Neolithic multiple burials.

7. Burials and Burial Customs.

The uncertain relationship of the Post-Neolithic and Pre-Medieval periods has already been mentioned. In Raichur the dividing line has been fixed at the point at which certain intrusions from the North (associated with the Satavshanas) appear. This line seems to coincide with a change in the predominant pottery wares from B1 red-and-black, to B2 and B3 red, black, and red-and-black

painted wares. This change, it is argued (p2915,5603) seems to coincide with one^{of}/far wider order noticeable also in the extreme south. It is, however, clear that the change in pottery is primarily one of fashion and not of technology and that no hard and fast line can be drawn between the two periods. In considering, now the southern Indian grave complex, fashionably dubbed megalithic, this fact must be borne in mind, for there is evidence that points to the lengthy survival of the burial customs well into the Pre-Medieval period. The grave types revealed by surface exploration in Raichur District have been already listed and, as there is a mass of excavational evidence available outside the District but comparatively little from within, it will be useful to consider at this juncture the wider aspects. The most suitable form for such consideration will be a resurvey of Codrington's 'Indian Cairn - and Urn-Burials',^{88.} which after nearly a quarter of a century remains essentially the sum of our present knowledge, with the one notable exception of the new chronological data that Wheeler's excavations at Brahmagiri, Chandravalli and Arikamedu supplied. The question of the dating of the graves will be discussed in Chapter XI.

a). The five main types of burial listed by Codrington are:

I. The Large Piriform Urn. The classic site of the

urn with truncated base is Adichanallur. It has quite a wide distribution in Tinnevely. Similar specimens occur at Pallavaram and at sites in Chingleput District. It also is common in the Pudukkottai State. The intervening districts have as yet not produced reports of such urns, but the probability that they extend further north along the coastal strip is suggested by their occurrence under part of a stupa at Amaravati. The extension of this type of urn into the Wynaad was noted by Cammiade. It occurs in Coimbatore whilst specimens are reported from the Shevaroy hills and a further site at Chik Jala, near Bangalore, produced an urn with finger tip impressed 'mark'. It also occurs at Mana-Gondahalli in Mysore and at Savanadurga. In Travancore it occurs in topi-kal (umbrella stone) graves and is further reported in Cochin and from Malabar.

There is, as yet, no report of the periform urn in the Western Deccan Plateau, and the recent negative results of the explorations of Subba Rao and the present writer in Bellary and Raichur districts can only reinforce this conclusion.

II. Pottery Cists and Legged Urns: footed urns. The pottery sarcophagus, with and without legs, has already been discussed in general relationship to the Raichur

evidence (p.229f). Codrington^{101.} did not mention the second localised area of occurrence in Raichur, Chitaldrug and Kurnool. The pottery cist was rightly held to relate^{102.} to the elephant-footed urn of the Perumbair type which appears to be hand-made, and as such, to differ from the^{103.} wheel-thrown urn with applique feet. The latter type of urn has a wide distribution and runs into several diminutive varieties which occur with other grave goods as the accessories to stone cist burials. It has been^{104.} reported in Coorg,^{105.} Coimbatore, Mysore at Savanadrug^{106.} at Brahmagiri in the excavations of Wheeler. On the^{107.} western coastal strip it has been reported in Malabar and to the east at Perumbair itself, and at Odogattur in^{108.} N. Arcot District. A fragment of such a foot was found by the present writer at Manvi in Raichur District (Pl. 76.No. 19). The specimens from Brahmagiri and Raichur are in typical B1 and B3 wares. The elephant-footed urn from^{109.} Hunkunti, discovered by Foote is of a very coarse ware and is entirely hand-made. It does not seem to relate to the applique footed urns, and its obvious animal form makes it unique. (The present writer in visiting the site discovered among many fragments of comparable ware, the detached terracotta head of a buffalo which seems to have come from a similar urn).

III. The Kuta-Kallu (umbrella stone) graves of the Malabar laterite regions, consist in essence of a small pit excavated vertically in the rock and crowned with a capstone. The hollowed chamber is circular with a stepped entrance at one side, and a further hollow for a central urn. Codrington^{110.} rightly noted that the funeral goods and general form of this burial linked it closely with the urn burial, it being little more than a rock-cut version of the earth excavation.

IV. The Rock-Cut Cist or Pit-Chamber graves of Malabar occur in the low level (coastal) laterites. They are circular chambers larger than the Kuta-Kallu graves and cut into the rock horizontally, being sometimes provided with a hole in the centre of the domed roof.^{111.} Some examples have deeply cut entrance porches and excavated trap drains to take off rain water. Others have a central pillar left unexcavated.^{112.} In one such example there was a small niche carved in the wall of the chamber and the grave goods included the footed urn. In some cases these graves have stone circles over them, another feature linking them with the whole grave complex. The central pillar lead Jouveau Dubreuil to suppose that the graves had a 'vedic' origin,^{113.} and in spite of the great weight of evidence against such a view it has recently been revived.^{114.}

L.A. Krishna Iyer noted that these rock-cut chamber tombs "run to thousands in each taluk of Malabar, Cochin and Travancore."^{115.}

One further type of rock-cut chamber deserves notice.^{116.} Logan describes a group of rectangular, vaulted cells near Calicut which contained pottery and iron remains similar to the grave chambers. He concludes that the cells were used as places of interment for a family who were accustomed to burn their dead. This cell type, if indeed it is a burial place, links up with other cells in southern India, some of them inscribed and generally associated with Buddhist or Jain mendicants. The interest of the whole question of these caves is that they may throw epigraphical light on the dating, and that the scripts have much in common with the Tamil inscriptions discovered at Arikamedu.^{117.}

V. The Stone Cist Graves. The various types of this grave in Raichur with notes on their distribution have been discussed above (p.224). The cists occur in granites, sandstones and laterites in the various areas. They occur on the bare rock or partly buried in pits, or completely buried. These factors may vary locally. The cists may contain piriform urns,^{118.} legged or legless sarcophagi,^{119.} footed urns,¹²⁰ or they may contain single or multiple secondary bone deposits,¹²¹ or extended or con-

122. 123.
tracted interments, or cremated remains.

At Raigir the extended burials seem to have been associated with those cists that had peaked or gabled orthostats. In these cases there were regularly numbers of large urns placed around the walls of the cist.

The cists vary in size: they may be large enough to hold twenty men standing upright, 124. coffins large enough to hold a single corpse 125. or single slabs raised on stone supports at the corners. 126. The orientation varies from district to district, site to site, and even within sites. 127. The 'porthole' is in no way a constant concomitant of cists, even in single localities.

VI. A type of burial not noticed by Codrington is the Pit Circle. 128. First described by Meadows Taylor, this type has since been excavated at Brahmagiri, 129. and at Junapani in Chota Nagpur. 130. It is in Raichur, and may well occur widely in the areas where cairn circle graves are known. The northern extension of these graves raises many problems, not least that of their relation with the cairn graves with microliths, rude pottery and interments mentioned by Smith as excavated by Carlleyle in the valleys of the Vindhya. 131.

b). We may now summarise our evidence on the southern grave complex. Burning appears to be rare, and the in-

humation of the corpse is less common than its excarnation and collection of bones, (ossuary deposit). The main types of burial so far revealed are:- 1). The Piriform urn occurring along the coastal strip, south from Malabar on the west, and as far north as Amarāvati on the east. This type hardly occurs in the Deccan plateau but appears in its southern fringes in the Wynaad on the south-eastern extremes in the region of Bangalore,, and the Shevaroy hills (where it appears to be perhaps an isolated survival). 2). The Pottery Cist and sarcophagus with or without legs occurring in the Chingleput area, and indicated in the Raichur-Bellary region. 3). The local rock-cut cists and chambers of the Malabar lateritic regions, sharing many traits of urn-and-cist-burials of the granitic areas. 4). The stone cists, more widespread than any of the earlier types and running into considerable local, geographical variation. 5). The Pit Circle Graves, a type as yet not widely recognized and extending northwards to the limits of the grave complex - the Chota Nagpur region.

All these graves are found to include pottery of red-and-black (B1) ware, and numbers (see p. 552 above) have also vessels and forms of the B2 and B3 wares which indicate the survival of these wares to a later period. The graves contain a wide range of iron objects, distributed throughout the whole region and all the grave types.

Objects of Gold, bronze (often with high tin content) and copper also occur but less frequently and less widely. Stone implements are notable by their absence. The example from Pudukkottai (Mottai-malai) of an urn burial with "polished stone weapons, stone spearhead with spoked handle, ... and scraper" is almost unique.¹³² The iron implements are generally those of the southern iron industry, and distinct from those of the northern industry exemplified, at Taxila.

It is clear that the common feature that occurs again and again in the graves of the complex, and distinguishes them from the earlier Neolithic inhumations, in the presence of subsidiary (ossuary) deposits and multiple burials.

I. Piriform urns containing collected bones are often found deposited in groups inside a common stone circle or cairn.¹³³

II. The pottery cists have often deposits of smaller vessels, containing sometimes fragments of bones, around them, whilst in V, the stone cists, and VI, the pits, there is a wealth of evidence to show that many subsidiary deposits occur - both inside the cist, or as at Raigir in pottery urns and vessels outside it.

Wheeler favoured the term 'macerating pits' for the pit circles excavated at Brahmagiri.¹³⁴ In one

case there was no trace of bones in the pit, whilst in each case four stones appeared to form the resting place for the legs of a bier. He put forward the theory that the body was left exposed upon the bier until the bones were excarnated, when some or all would be collected and deposited in a cist. The term 'macerating' is generally associated with the process of excarnation by steeping in acid or fluid. Further this theory cannot account for those pit circle graves which were used for multiple burials (as reported by Meadows Taylor.^{135.}) Thus it seems that their use of some form of excarnation is not yet fully proven. It is interesting to note the survival of pits for multiple burial to the present day, whilst the use of pits for exposure is as yet not reported.

Another interesting feature of the pit circles of Brahmagiri is the presence of Chūnam (calcareous earth) fillings of the entrance ways.^{135a.} This feature also was found in the entrance way leading to the porthole in the cist graves.^{135b.} Chūnam has been also noticed in Gulbarga District by Meadows Taylor and Mahadevan and in Raichur by Munn. Its significance in the graves is not clear, but the modern practise which may be connected is noticed below p.473 .

An interesting speculation arises in connection with the porthole. In some cases (e.g., Brahmagiri) it was approached by a ramp, and excavation suggested that this

access remained open ~~for~~ some time, allowing the multiple or subsidiary deposits to be added inside the cist. At Raigir and other sites noticed by Hunt,¹³⁶ there were large numbers of pots deposited outside the wall of the cist, in the pit and at various levels. The porthole was absent and it is perhaps justifiable to infer that the majority of the subsidiary deposits were placed outside the cist as access to the interior was not possible.

Hunt maintained that these outside deposits were at various levels and thus deposited at various widely spaced intervals of time. This appears to be inconsistent with his own photographs of the excavations, and a more rational account seems to be that the cist was built with the orthostat, let into pits in the floor of the grave pit. The side slabs were also let into grooves in the floor. In some cases the actual area of the cist was first excavated so that the cist floor was lower than the ground outside it. It was upon the 'ledge' so left around the cist that the subsidiary deposits were placed.

Orientation. It has been commonly noted that South is the quarter of Yama, and that graves, portholes etc., are frequently aligned on that quarter. There appear to be many exceptions to this rule, and at Site 6 a wide range of directions was noted. A possible explanation of the orientation of the grave entrances is now suggested. At Piklihal, graves mainly south of the settlement had a

southern alignment, whilst at Brahmagiri graves mainly east of the settlement had an eastern alignment. This could indicate that the grave entrance was set away from the settlement, and that orientation varied accordingly. If further it is accepted that the dead will travel in a southerly direction, the placing of the cemetery on the south of the settlement will be seen to be most convenient. This hypothesis requires testing at other sites at which the settlement and graves are in a known relationship.

c). Literary references to the S. Indian Burials.

Since Codrington's important interpretation of the references found in early Tamil texts, it is greatly to be regretted that no Tamil scholar has made an exhaustive study of the Sangam and Post-Sangam literature. Despite the fact that translations have appeared of Manimekhalai and Silappadikāram¹³⁷. and Srinivasan has made a useful contribution in his paper "Megalithic Burials and Urn-Fields of S. India"¹³⁸. the proper evaluation of this material is still required.

It must be stressed that the early Tamil literature can only be expected to relate to the custom of the Tamil Nād - the areas of the ancient Chola, Chera, Pāndya kingdoms, whilst to the north of the Nilgiris lay the wild border tribes Vadavar or Vadukan and the Karnāṭaka or

Karunādu¹³⁹. if the antiquity of these terms could be proved.

It is interesting to notice that in the earliest Sangam works, Narrinai, Padirrupattu and Puranānūru, urn burial is repeatedly mentioned. The burial ground is mentioned as the repository of urns, and cremation is only rarely referred to. This may be taken as an indication that inurnment was the earliest form of burial, but it appears more likely that it was the refined form as opposed to rustic inhumation. One reference mentions the co-existence of urn burial, cremation and simple inhumation.¹⁴⁰ The frequency of the references to urn burial suggest that it was the dominant custom, and that cremation was comparatively rare. Certainly in the Sangam texts inhumation is extremely rare.

That Manimekalai is a later work is now generally agreed.¹⁴¹ It seems quite certain that a date 4th-6th century A.D. is not unreasonable. In the famous description of the Cakravālakōṭṭam at Puhār (Chapter 6) a well-planned city-graveyard seems to be indicated, in contrast to the simple wast-land sites referred to in the Sangam works. Thus the area is walled, with four gates, and a temple lies within the confines. It is known as the burning ground (śūdu kāttu kōṭṭam), and contains memorial pillars of stone, and brick platforms. Five sorts of disposal are clearly mentioned: cremation, exposure, burial in pits, burial in

subterranean cellars or vaults, and burial in urns with covering lids. There is further mention of platforms and resting places for the dead.

It is evident that at the time referred to in Manimekhalai there was considerable diversity of practice, and it may be assumed that the diversity reflects the complex town society. Thus cremation was no doubt for Brahmins or buddhist, the urn for the higher strata of "Dravidian" society, the simple burial and exposure for the lower castes.

Finally Srinivasan has shown¹⁴² that by the 11th-12th century A.D., the custom of urn burial was largely forgotten, or at least misunderstood in the Tamil literature.

There is as yet very little evidence for the recognition of these S. Indian burials in Sanskrit literature. The reference in the Rāmāyana of Vālmīki (Āranya Kanda) to the burial of the Giant Virādha in a pit under a pile of stones, brings to mind the pit-circle graves, but these, it has been seen above (p.463) are to be found as far north of Chota Nagpur. That they were outlying types, possibly connected with the Vindhyan cairns has been already suggested.

d). Modern Burial Practice.

In the peninsular of India, and particularly the areas

in which Dravidian languages are spoken, the orthodox Hindu cremation is the peculiar custom of the dvija (twice-born), particularly the Brahmin. If today it has spread widely to other castes, it is, as Codrington remarks, "because it is the orthodox, normal Hindu practice, and was the orthodox, normal Buddhist practice".¹⁴³ This does not exclude the possibility of certain non-aryan tribes practising cremation independently, nor does it imply that there are not castes who have no hard and fast rule for disposal, but it does indicate that the majority of those who practise some form of burial are sudras or outcastes, whilst the extraordinary persistence of the process of "Brahminization" is nowhere clearer than in the rites of disposal of the dead, and must be reckoned with at every step in their investigation.

The archaeological evidence now available suggests that the Neolithic burial practice was single inhumation, generally in extended posture, whilst the Post-Neolithic burials of the southern grave complex appear to indicate a dual rite first of some sort of excarnation and finally of collection of bones and often multiple or subsidiary deposition in stone-cist or pit. It would be interesting to analyse the modern burial customs and see how far they follow these two forms.

The forms of disposal recorded in modern times are invariably complex, and combine elements of almost certainly

various origins. Thus the Sapinda or Srāddha rites of the orthodox aryan cremation may occur as the sequel to burial, whilst cremation and sancayana (collecting of the ashes) with subsequent inurnment may occur alongside curious survivals of dual ceremonies. In view of this complexity, it is not surprising that the simple inhumation in extended posture is rarely mentioned and occurs as the main rite only among such tribes as the Kadir,¹⁴⁴ or the Irula of Chinleput.¹⁴⁵ Variations of this inhumation involve the exposure of the corpse in a temporary booth of bamboo and cloth before burial¹⁴⁶ and in some cases the erection of a head-stone. Multiple burials are not frequently reported and often involve unusual features, as with the sholagas of Coimbatore who buried their dead in a cleft in the rocks, and sealed the entrance when it was not in use. The Nilgiri Irula bury in a pit and often re-open an old one for a later burial. Harkness, however, observed a more interesting variation of this.¹⁴⁷ A large pit was excavated and covered over with a wooden platform, with a small aperture in the centre via which the dead were deposited. When the pit was not in use a small cairn was erected on a slab covering the aperture. In modern Brahmagiri a somewhat similar pit is still in use. This practise could well account for the pit-circles of Gulbarga. A further type of inhumation which appears to relate to ancient practise places the corpse in a seated (padmāsana) posture in a recess

dug in the wall of a pit. Burials of this type have wide distribution in modern times through its adoption by the Kingayats, but it occurs widely in the Tamil nad and W. coastal strip. A variety is recorded by Thurston¹⁴⁸. in which the recess is long enough to receive the extended body. Chūnam or lime are sometimes added to the earth infilling. These burials appear to relate to the rock-cut chamber graves of Malabar.

The dual nature of certain rites of disposal is most clearly seen in the Green and Dry ceremonies of the Todas. These have been exhaustively reported by Brecks and more recently Rivers.¹⁴⁹ The essential features of the Green funeral include the empounding of buffaloes in a stone pound, the catching and killing of one or more at a spot marked by a stone,¹⁵⁰ the cremation of the corpse with various items of domestic or personal use. After the cremation a piece of ^{bone} (usually the skull) is stored in a safe place. In the Dry funeral it is customary for the rites of several individuals to be celebrated at one place and time. The fragments of bones collected at the Green funeral are burnt, after the sacrifice of buffaloes, together with further objects. These may include knives, axes, pounders, and less durable items.¹⁵¹ After this second cremation the remains are collected and buried in a pit, often finally covered with a stone or stones. A similar Dry funeral is observed by the Kotas of the Nilgiris.

There are many traces of ceremonies that must be connected with the dual funeral. Thus the Koragas of S. Canara¹⁵² bury the corpse; sixteen days later a quantity of earth is removed from the grave, mixed with rice and toddy and reburied with a small stone erected above it. Among the Urabi¹⁵³ the body is carried to the burial ground in a car, and there buried and a stone is erected over the grave. Two years after the body is exhumed, the bones are collected and reburied at a tribal centre at Nirgundi. Among the Baidyas of S. Canara earth is exhumed from the grave, burnt and reburied. A car or booth is erected at the spot. Among the Eastern Kullans, the skull is exhumed, worshipped and reburied. A ceremony which involves the spirits of all those who have died since the last performance is recorded by Thurston among the Badaga. A large car is constructed and a mattress laid in its lowest tier for the souls of the departed, whose ear-rings are also deposited there. This car is taken to the funeral ground and burnt.¹⁵⁴

e). Conclusions.

The ethnographic evidence supplies, beyond doubt, many survivals of the ancient practice, and suggests affinities with many of the burials of the complex. The ancient Tamil texts show quite clearly that the main types of disposal were known to the author of Manimekhalai, and suggests that on the Tamil plain the urn burial was the

earliest and refined form. It is now perhaps legitimate to draw certain general conclusions on the purposes of monuments found associated with the graves in Raichur and elsewhere. The stone alignments may be merely memorial stones or may, more plausibly, be associated with the sacrifice of cattle and the offering of other things, to the presiding deities. The rough stone rectangles may be cattle pounds used to keep the cattle for sacrifice, or they may mark enclosures for the exposure of the dead. The rectangular walled enclosures may serve this latter purpose, but more probably were "temples of the burying ground." The square-circular platforms may prove to be large graves, or they may be 'cremation areas' comparable to that excavated by Meadows Taylor at Shahpur. It appears that in some cases, possibly under the influence of the Neolithic burial customs, the body was placed inside a stone cist in extended position. Before the closing of the cist, (if it was without porthole, as at Raigir) other 'dry funeral' deposits were made at this time. After the closing of the cist the pit may have remained open and further secondary bone deposits made outside the cist, unless there was a porthole in which case the deposits could be laid inside (Brahmagiri). In the case of the urn burials some may have included whole corpses but it seems more likely that the general practise was exposure of the body on a platform or under a temporary booth, and later inurnment of the collected bones. This exposure may also have

taken place in pits (as at Brahmagiri). The pottery sarcophagus and cist seems to have been used for collected bones.

f). The South Indian Grave Complex: external affinities.

Meadows Taylor, Fergusson and many others were struck by the similarity of certain European and Indian graves. More recently Childe has tried to evaluate this type of comparison, in a study of ancient 'megaliths' from Europe and Asia.¹⁵⁵ It appears that at present, little interest emerges from the comparison, as the disparity of time is so marked. We do not intend to discuss the relationship of the S. Indian graves to those of S.E. Asia, although there is clearly considerable importance in the problems that are involved. There remains the question of their relationship to the graves which lie close to the sea routes from India to the centres of the eastern Mediterranean, and in particular to those reported in southern Arabia and on the coasts of the Red Sea.

Carter reported that at two places on the S.E. coast of Arabia he found graves.¹⁵⁶ At Ras Resut at the western extremity of Dofar, there is a small peninsula with the ruins of stone buildings and a round tower. Nearby, is a number of graves. These consist of circles of boulders of 18'-36' diameter with cairns of loose stones, often sunken in the middle. At the centre, on examination, it

was found that at a depth of about 4' a large slab was encountered. Further exploration was not possible but it appears that the slab covered a stone cist. At Damkot in the bay of ~~Mammar~~ is an extensive grave-area exactly similar to those at Ras Resut. Other graves of similar type are reported by Cruttenden from Somaliland.^{157.}

Philby reports several types of grave in the course of explorations in the Hadramaut.^{158.} At Wadi Shudhaif he noticed rough cairns of Hewn rock near a rock built dam,^{159.} and a circle of rocks with a larger rock at the S. side was among the graves.^{160.} On the 'Alam Abyadh ridge he saw "thousand upon thousand" of tombs, circular in shape, built up of slabs of the local limestone, untrimmed, and about 10' high with diameter of about 25'. The chamber inside was roofed over but no remains were found.^{161.} At another place a cemetery of graves of large dimensions, made of of rocks, and some with head-stones.^{162.} On the Maia hills^{163.} at al Dhiyaq were further graves of the Alam Abyadh type.

Other explorers of the Hadramaut have reported rock-cut cave graves.^{164.} At Suna the caves had a series of niches or recesses around the central chamber. A variation of this type of grave was excavated and described by Caton Thompson.^{165.} The circular niched caves were cut into the foot of cliffs to the north of the valley which held the Temple, and seem to have contained multiple collected burials. The objects found in the caves included pottery

of distinctive forms, but apparently hand-made, bronze bangles and other small articles and quantities of obsidian microliths. Ancient irrigation also was reported in the area.

At Hugga in the Yemen a tripod urn, apparently containing human skeletal remains is reported.¹⁶⁶ This urn is identical with Indian grave specimens.

Elsewhere in Arabia many reports exist of stone circle graves, often with central stone cists. Thus Musil¹⁶⁷ illustrates such a grave. The same author notes niched cave graves¹⁶⁸ near a stone built rain pool at Madian, and figures simple stone circle graves (?) from Al-Bedi.¹⁶⁹ The same author illustrates a further stone circle with central (?) cist and headstone at al Assafijje.¹⁷⁰

The extreme scarcity of archaeological reports from S. Arabia demands the careful consideration of any clues. The close morphological resemblance of pottery types to Indian examples may be noticed. The cists, circles, rock-cut caves and niches all appear to have counterparts, whilst the circular chambers compare closely with the 'draw-well' type of grave reported by Brecks in the Nilgiris.¹⁷¹ It is to be hoped that the coastal sites, which may reasonably be expected to yield traces of contact, if any are to be found, may be more fully explored.

8. Religion.

The materials which indicate cult are almost all funerary. There are, however, a number of monuments, often ancilliary to graves, that seem to have been of slightly wider purpose. Certain of these belong more correctly to the subsequent period and will be dealt with accordingly.

The general relationship of these monuments in Raichur can be seen at Maski and Piklihal. There is a marked contrast to the closely knit settlement and grave areas that distinguished the Neolithic period. At Piklihal the grave sites lie scattered all around the hilly settlement area, for the most part to the south of it. Two stone alignments lie in close proximity with a major group of graves, a third is secluded in a tiny valley behind a small rocky hill, but also has graves in its immediate vicinity. At Maski the picture is somewhat similar. The main areas of occupation lay around the foot of the hill and on its lower slopes. To the south lay the three alignments, and in their close proximity, graves were discovered in the course of the excavations of the Archaeological Department. A little further south traces survive of cairn circle graves. It is a perplexing feature of many of the other grave sites in the district that as yet the settlement area has not been located.

Of the grave furniture, we may note the bells found

in a number of places. Do these indicate the sacrifice of buffaloes of the sort still practised among the Toda?¹⁷². At the Toda Green funeral a bell is placed on the neck of the sacrificed animal.¹⁷³ In the dry funeral, a bell is again present and is sounded. Bells similar to these, and pottery models of bells have been found in Nilgiri graves.¹⁷⁴ The wide occurrence of saucer lamps of iron in graves of the southern complex has been mentioned above (p. 445). Such lamps occur in the Nilgiri graves¹⁷⁵ and also the custom is noticed by Grigg of placing a lamp beside the corpse, in the grave of an Irula.¹⁷⁶ Another object of some cult significance is the iron trident which occurs in graves widely separated. Of particular interest is the Bowenpalli specimen (Pl. 107. No. 17) with iron buffalo attached to the shaft. Specimens from Malabar and Adichanallur were also noticed as suggesting the attachment of similar objects (above p. 445). These objects together suggest an interesting relationship. Yama is "Daksināsapati" in the Brāhmaṇas.¹⁷⁷ In the Mahābhārata he is described as riding a buffalo and bearing a mace and noose. From this he gains the epithets "Daṇḍī" and "Pāśī". In Tamil, Yama also shares with Siva the epithet "trisūlī" - trident bearer.¹⁷⁸ Thus in some unexplained manner, the southern orientation of graves, the trident and the buffalo occur both in the context of Yama and of the graves. A possible explanation is that Yama (Mahīśadvaja - with the buffalo as his emblem) is

intended to be empaled upon the trisūla of the Goddess - Mahīsamardinī. In the Purāṇa account of the death of the buffalo demon, the final act of destruction is carried out while the demon is thus held. Thus Devī becomes the slayer of death, and the Trisūla - emblem of Siva - is the instrument of the 'Death of Death'. In these circumstances the epithet 'Yamāntaka' - the slayer of Yama, is singularly appropriate for Siva. In this way the iron swords often found with burials can be taken to represent the Goddess in the act of slaying.

It seems legitimate to conclude that the cult indicated by these objects, included in it some reference to a form of Yama as god of death, and to forms of Siva and the Goddess as overriding death. This conclusion is not unreasonable in view of the early claims for Saivism as originating in the Tamil land.^{179.}

There remains a number of monuments associated with graves, but not apparently primarily funerary. The most interesting group is of alignments of standing stones (see Apx. I to this chapter). There seems to be no clue afforded by Sanskrit or Tamil texts for the purpose of these monuments. The only surviving indication is that the Nava Graha (nine planets) are nowadays disposed in Tamilnād, as if they were an alignment of nine stones

(three x three rows). It does not seem likely that the various combinations of numbers had a mystic purpose; there is such variation, 9, 16, 25, 36 and 49 being found, as well as 12, 20 and 35 and several larger groups. It is noteworthy that the Raichur examples are nearly all near major settlement sites. One solitary example being found above the crossing place of the Krishna river between site No. 86 and Gudabelur. Their frequent proximity to streams has been noticed already. Preliminary excavation of one stone of Fl at Piklihal provided no evidence as to use. The question remains as uncertain as the problem of similar alignments in Brittany and elsewhere.

The monuments of the second group are of two kinds: Rectangles of standing stones, and walled structures. The second kind will be dealt with in the following chapter. Rectangles of great stones occur occasionally in Gulbarga, Raichur and Bellary. Gulbarga contained the great Shahpur Tumulus described by Meadows Taylor. 180. This great rectangle, 400' x 260' was made up of a row of vast granite rocks. Inside was a square, at the western end of the long-E.W.-axis, of smaller stones and in the centre of this a tumulus, the sides piled with "large rocks" of greenstone. Excavation of the tumulus revealed "layer after layer of ashes, partially burnt bones, and

bits of charcoal, earth and sand run into a slag." Taylor concluded that the function of this tumulus was as a place of cremation, with successive relevellings. The depth of such layers was nine feet at the centre. The actual diameter of the tumulus being about 180'. It appears possible that the monument contained two distinct features: the tumulus itself, which is very closely similar in size and form to the platforms of type D (see above p.228) and the stone rectangle. A second great tumulus with original rectangle of stones existed nearby in the lands of Rakhamgiri.^{181.} Here also there were smaller cairn circle graves nearby.^{182.} Also in Gulbarga District, Mahadevan shows a similar rectangle about 150' x 100', lying to the north of the cairn-and-cist circle graves at Mallur, whilst the Archaeological Department Report notices a rectangle of stones 40' x 35' E. of the cist-graves at Rajan Kollur.¹⁸³ In Bellary District, Subba Rao noticed two "oblong cairns" the stones of which were arranged in a rectangular fashion.^{184.} Another rectangle, apparently closely resembling the Raichur specimens appears to be illustrated by Krishna at Brahmagiri.^{185.} In Raichur only one site has produced monuments which can compare in any way with those of Gulbarga. At Piklihal, four were noticed, but they were all much smaller than the previously mentioned examples. The best presented was 36' x 28' with a roughly N.W/S.E. long axis and entrance at either end.

The other one noticed was somewhat larger and with a similar orientation. The single entrance way to the S.E.

Little can be said of these rectangles except that they occur in close proximity to burial sites.

In this context, and with reference to the stone-rectangles to be detailed in a following chapter (p.536) it is worth noticing that these monuments, whether funerary or not are clearly extensions of the 'temenos' idea, and should be studied in this context. For the idea of the temenos as a theatre for ritual and as the sacred enclosure marking the precinct and protecting the venerated place or object is one that occurs in a social context. In the north of India it may be traced in the early examples of the Buddhist railing surrounding trees, stupas, etc., and more particularly in the railing surrounding the Heliodorous column at Vidisā,¹⁸⁶ the stone rectangular courtyard associated with the worship of Vasudeva (pūjā - sitā - prākāra) at Hāthiwāda¹⁸⁷ etc. These courts probably date from the two centuries that straddle the beginning of the Christian era. The railed court around a pillar certainly suggests the Valigunda example whilst the courts of Jamshed suggest the Hāthiwāda type (see following chapter, pp.536f).

APPENDIX I.STONE ALIGNMENTS

Meadows Taylor published the first notices of these monuments over a century ago. ^{188.} In these reports he noticed three examples in Gulbarga District. Later Munn and his workers reported further examples in Gulbarga, Mahbubnagar and Raichur Districts, and the Archaeological Department of Hyderabad photographed and published an account of one of those first noticed by Meadows Taylor. The present writer discovered a number of new examples of the monument in Raichur and Mahbubnagar districts. As this type is perhaps limited to the area of these finds (no examples being reported elsewhere excepting the single line of four standing stones in Cochin ^{189.} at Komalaparathala, and as a recent writer has thrown doubts upon the genuineness of earlier reports of 'alignments' and 'avenues' and even of certain reported ^{190.} 'Menhirs', it appears expedient to assign the alignment its rightful place as a post-neolithic monument.

The following list includes every specimen so far reported.

GULBARGA DISTRICT.

1. Vibhutihalli. Meadows Taylor, Reprints pp. 31-2, 108. About 100 yds. E. of S.K. Muherjee JHGS. Vol. IV, pt. 1., p. 54. 1 furlong N. of the Village of V. ARHAD. 1940-1. p. 12 (Pl. XIVa). Pink granite rocks, 3'-4' high, 360' x 340' with 22 rocks on each complete side (MT). c. 15' and 18' intervals. Cairn circles in area c. due N-S orientation.
2. Shahpur. M. Taylor, loc. cit. p. 34. Near Rd. from Shahpur-Saggi about 1 mile S. of Shahpur. Near Rackhangiri. Smaller than 1. (M.T). Cairn circles in area.
3. Shahpur. M. Taylor loc. cit. p. 35. ARHAD. 1940-1 p. 12. (Pl. XIV b). Near E. gate of Shahpur. Near Benkanhalli village (Shahpur). Imperfect (M.T.) Two of the menhirs measure 28' & 15' in length. (ARHAD).
4. Ijeri. M. Taylor. loc. cit. p. 111. Near Ijeri village about 18m. N. of Shahpur. 6 x 6 stones, Due N-S orientation. 2 cairns in interstices (M.T.)
5. Nilogi. Munn, map at present in office of Geological Survey, Hyderabad. No information. No information.

- | | | | |
|---|--|---|---|
| 6. Hanamsagar | J.H.G.S. Vol. IV. pt. 1, p.157
Mahadevan, loc. cit. pp.8-9.
ARHAD 1940-1 p.13. | 1m. N.E. of H. village
in Lambardi Thanda. | About 880yds. square, with
about 1000 stones of por-
phyritic gneiss and trap
dyke rock. 4'-6' height, with
central enclosure about 100'
square. Cairn circles in
vicinity. |
| 7. Halbhavi. | JHGS. Vol. IV p.t 1. p.157.
Mahadevan, loc. cit. pp.6-7. | W. of H. village near
Hanuman temple. | Massive menhirs of gneiss,
number not stated. (M).
Cairn circles close by. |
| 8. Bachimatti. | JHGS Vol. IV. pt. 1. p.157.
Mahadevan, loc. cit. p.7. | On oval hill 1397'
about $\frac{1}{2}$ m. N.E. of
B. village. | Gneiss menhirs. Number not
stated. Locally known as
Gadachumaddi (M). Cairn
circles close by. |
| 9. Paramanandhill, JHGS. IV. p.t 1. p.157
Halanmardi. Mahadevan loc. cit. p.7. | | About 1 m. S. of
Benkanhalli (Surapur) | On the top of the quartz
hillock Halanmardi. Gneiss
boulders, three or four rows.
Is flanked by cairn circles (M) |
| 10. Chickanhal -
Mangihal Path. | " " | S.W. of Surapur. | Much disturbed, of gneissic
boulders (M). |
| 11. Mallur-Vitragal
Path. | " " | E. of Mallur village. | Much disturbed. (M). |
| 12. Rajan Kollur | " " | Due E. of village. | On a small syenite mound. A
row of sandstone menhirs,
many now removed (M). Cairn
circles nearby. |

13. Hegratgi JHGS.IV. p.t 1. p.157
Mahadevan loc. cit. p.7.

S.E. of village.

Locally called 'Mantraki', cattle being lead round at times of sickness. Only 4 stones survive. Cairn and circle graves in the area. (M) and (MT).

(See also M.Taylor loc.cit.p.22-4).

MAHBUENAGAR DISTRICT.

14. Mudumala. (Krishnamurthy L.S.) JHGS.IV
pt. 1 p.86.

E. of M. village

No details given.

15. Murardoddi " "

1 m. S.E. of M.
village.

Near a circular platform and cairn circle graves. N-S orientation. 14'-16' high originally 6 x 6 and about 200' sq. Known locally as "Nilu Ralloo". They are associated with petrified villagers.

16. Madhawaram Krishnamurthy loc cit. p.87.

Just N. of M. village. 7 x 7 about 150' sq. Nearby are cairn circle graves and a single 'long pillar'.

Locally called "Nilu Rallo cheluka".

17. Kundanpur-
Sanganunpalli
track.

Just S.E. of Hill
2132'.

"Some fallen, rough-hewn stones" (K.M).

- | | | | |
|--|---|---|---|
| 18. Kotakunda-Koilkunda track. | Krishnamurthy loc.cit. p. 87-8. | On bank of Pedda Vagu stream. | About 22 pillars are observed, many fallen and partly broken or buried. Locally known as Elephant Stones. "Yenagu rallu". |
| 19. Hindupur-Gudabelur track. | " " " p.86. | On a quartz ridge about $\frac{1}{2}$ m. W. of main road. | Not described. |
| 20. Gudabelur. | F.R. Allchin, see above p. Site No. 95. | About 400 yds. N.W. of temple. | 4 x 4 rows of stones at about 36' intervals. Orientation 10° E. of N. Pink gneiss. |
| 21. Raichur- Mahbubnagar Rd. 75.7 mile stone. | F.R. Allchin. | On W. bank of Pedda Vagu stream about 1m. W. of Gopalpur, N. of Rd. | 4 x 3 rows of stones of pink gneiss, N-S orientation |
| 22. Raichur-Mahbubnagar Rd. 71.4 mile stone. | F.R. Allchin. | About 2m. N.E. of Devakadra on N. of Rd. | Of grey gneiss, 4'-6' high. About 24 stones. |
| 23. Mahbubnagar-Hyderabad Rd. 53.4 mile stone. | " " " | N. of Mahbubnagar, 5 miles to S.E. of Rd. | 5 x 5 about 50 yds. sq. Of grey gneiss, about 20 stones remain, with ciarn circle graves around. On banks of stream. 30° E. of N. |

24.	Mahbubnagar-Hyderabad Rd. 45.3 mile stone.	F.R. Allchin.	To E. of Rd.	Number of stones not mentioned.
25.	Mahbubnagar-Hyderabad Rd. 54.1 mile stone.	" "	E. of Rd.	4 x 4 of grey gneiss. There are about 13 cist and cairn circle graves around the alignment. N/S orientation.
<u>RAICHUR DISTRICT.</u>				
26.	Hardi gudda	(See above Site No. 21)	No Details.	
27.	Maski. A1.	(" " " 47)	3 x 3 stones, oriented 20° E. of north (See plan Pl.).	
28.	" A2.	(" " " ")	Much damaged.	
29.	" A3.	(" " " ")	Number of stones not clear, plan irregular.	
30.	Jamshed A1.	(" " " 80)	4 x 4 stones originally 4'-6' in height, grey gneiss. Lies near platforms. The interstices are 36' E.W. and 28' N.S. Orientation 20° E. of north. Near stream, (See Plan Pl.) close to cairn circles	
31.	" A2.	(" " " ")	5 x 5 stones, overall size 120' x 102'. Grey gneiss. Orientation 150° E. of N. Near stream. Close to cairn circles.	
32.	" A3.	(" " " ")	Few stones over 3' at present, and conical in form. About 20 in number; orientation similar to A1 and 2. Near stream. Close to cairn circles.	

33. Jamshed A4. (See above Site No.80)

34. " A5. (" " " " ")

35. " A6. (" " " " ")

36. Krishna Bridge (" " " " 84).

37. Pikhilal Fl. (" " " " 91)

38. " F2. (" " " " ")

39. " F3.

Near settlement area 'Potla pahad' and on banks of stream. 4 x 5 stones with interstices of 21' on N/S axis and 22' on E/W. Orientation 15° E. of N.

Consists of three loosely scattered groups in a space of 150 x 200 yards. Many stones appear to be missing. One group consists of 7 x 5 stones. Orientation 20° E. of N. The interstices of this group were 27' x 36'. It lies on the side of the nullah.

3 x 3 stones very near the bed of the nullah. Orientation 15° E. of N.

Of grey gneiss. About 20 stones remain, ? 5 x 5 originally. Orientation 5° E. of N. Near cairn circle graves, about 2 furlongs S. of River.

Of gneiss. 20 stones still standing with one row of 7 with orientation 20° W. of N. Close to cairn circle graves. (See Plan Pl.).

Much disturbed, original number of stones and orientation could not be discovered.

About 20 stones of up to 7' length, many now fallen. Of grey gneiss, and approximately N/S orientation, probably somewhat W. of N. Original number 5 x 4 (?)

From the above list we may note certain common features. The alignments have in every recorded case a roughly N/S orientation of their outer sides. In nearly every case noted this orientation varied by 10° - 20° east of north. The monuments are usually squares with 3 x 3, 4 x 4, 5 x 5, 6 x 6 or 7x 7 rows. One of 4 x 3, another of 4 x 5, and one of 7 x 5 are also noted. A few cases have obviously more stones, 22 x 22 in one and "about a thousand stones" in another. They occur with suprising frequency besides cairn - and cist- circle graves, 19 out of 38 being so situated. They occur in Raichur in three cases near major occupation sites, and probably so in numbers of cases in Gulbarga and Madhubnagar, although the evidence is wanting. In Gulbarga district some are reported as being on natural hillocks. This is unusual, for in the majority of cases they lie close to or even in the beds of streams and rivers. The occurrence of no fewer than 7 along the course, less than 50 miles of a modern main road is a fact that requires explanation. Either it indicates a like frequency in the lands on either side of the road, or that the route was used at the time of their building.

Evidence of Dating. The association with cist- and cairn- circle graves seems to indicate that the

alignments are roughly contemporary with these monuments. Excavation at Piklihal further strengthened this conclusion by revealing sherds of exactly comparable red-and-black (B1) ware in small depressions in the surface of the moorum around the alignment, and in the nearby cist graves. ~~We may thus conclude that the Raichur alignment, and in the nearby cist graves.~~ We may thus conclude that the Raichur alignments date generally from the same period as the cairn- and cist- circle graves of the district.

Method of quarrying and erection. No trace of drill marks could be found on any of the stones examined. Some of the longer stones (e.g. at No.15) of 14'-16' in length must have been detached by means of the fire setting method, but it seems highly improbable that such an operation would have been possible without the aid of iron crow bars and chisels. By far the greatest number of stones are of 4'-6' in height. 4' and less are often rounded and appear to be naturally detached. The excavation at Piklihal showed that a stone of 6' in height was erected in a small pit of about 10" in depth. The small depressions around this pit suggest that they were used as rests for smaller stones to act as fulcra for the levers used in erection. The stone when upright was held in position by small stones wedged around the base.

References in literature or modern Ethnographic indications.

There appear to be no references in Sanskrit literature to the alignments. In Tamil literature, -the product of the Tamil nād,-there are references to "pillars to which offerings were made",^{191.} and to nadukal, apparently a tall stone erected over a grave.^{192.} In none of these references is there a suggestion of the regular disposition of the stones.

There is a number of customs, noticed in connection with modern funerals, that may be related. Thus at the Toda green funeral the buffalo is sacrificed over a stone set up to mark the spot.^{193.} Among the Koyis of the Godavari District, it is recorded that cows are sacrificed at the funeral. The tail of the animal is first tied to an upright stone, and after the sacrifice, it is severed and remains attached to the stone.^{194.}

Purposes of the alignments. The proximity to graveyards may indicate funereal connections, or merely that both places were peripheral on areas of human habitation, settlement sites, towns or villages. The probable proximity of roads or trade routes and, at least in some cases, market towns, makes it possible that the stones represent bazaars or village meeting places. The animal 'mela' with its part religious, part commercial, part

social content is perhaps suggested. Against this suggestion may be placed the regular orientation of the stones, their regular numbers, and the proximity of the graves. The siting of some examples on the banks of nallahs could be used for either argument. A recent parallel of the bazaar idea is to be seen in the long stone bazaars near Hampi village and outside Anegundi. These lie outside the modern centres of population and are still associated with annual fairs (for example the Hampi Ratha Yātra in honour of Pampāpati-swāmi). Although these bazaars can all be traced to the Vijaya-nagara period there is no reason why the idea should not be more ancient.

CHAPTER VIII: NOTES AND REFERENCES

1. Wheeler, R.E.M. A.I.4. p.202 etc.
2. Hunt, E.H. Photographs of Excavations at Bowenpalli in Hunt collection, now in S.O.A.S.
3. Rea, A. C.P.A. Pl. II No.24 etc.
4. ibid Pl.II No's. 21 & 27.
5. Rea, A. A.R.A.S.I. 1902-3.
6. Marshall, J. Taxila, 1951 Vol.II p.535; and A.R.A.S.I. 1913-14. pp.203-4. for analysis of steel sword recovered during excavations at the pillar of Heliodorus at Besnagar.
7. Heron, loc.cit. p.57.
8. J.H.G.S. II Pt.1. p.15 ff.
9. ibid p.19.
10. ibid. p.94.
11. Elwin, V. The Agaria Ch.III.
12. ibid pp.175-7.
13. ibid Apx. III pp.274-5.
14. Thurston, E. South Indian Tribes and Castes - "Kammara"
15. A.R.H.A.D. 1937-40.
16. Elwin, V. The Agaria, pls. 23,28,29 etc. and Cammiade, L.A. 'Man' 1931 No.65 for an example from the Kois of the Eastern Ghats.
17. Edgar Allen News Vol. 4 No.48, May 1926 fig.2.
18. Elwin, loc.cit. p.64 ff.
19. Foote, I.P.P.A. p.73, 76, 78, 81.
20. J.H.G.S.II. p.tl. Pl. XVI 22.
21. Cammiade, loc.cit.

22. Elwin, loc.cit.
23. Neogi, P. Iron in Ancient India, 1914. pp.61-2.
24. Elwin, loc.cit. pp.174-5.
25. ibid p.194. 26. ibid pp.177-185
27. ibid pp.186-191. 28. ibid p.195-203.
29. Garland & Bannister. Ancient Egyptian Metallurgy, 1927, p.107.
30. Hutton, J.H. The Angami Nagas, 1921 p.63.
31. Elwin, loc.cit. pp.103-6.
32. Hadfield, R. J.R.I.S.I. 1912 pp.163-8.
33. Letter of Hadfield to E.H. Hunt, now with Hunt Papers in S.O.A.S.
34. Cunningham, A. The Bhilsa Topes. Pl. XXXIII, fig.8.
35. Rivett-Carnac, J.H. J.R.A.S.B. 1879 p.7.
36. Petrie, F. Weapons and Tools p.55, Pl.LXVI, Nos.34-8.
37. Marshall, loc.cit. 1951 Vol.II Ch.27. No.191.
38. Elwin, loc.cit. p.243, fig.44.
39. Marshall, loc.cit. 1951. Vol. II Ch.27. Nos.203-6.
40. D.G.A's Report 1918-19, plates 99-106.
41. Rea, A. loc.cit. "Iron Objects" Nos. 214-21.
42. A.I.4. fig. 39, Nos. 31,32 and 36 and fig.35 No.1.
43. ibid fig.38 Nos.25 and 26; &
Rea, loc.cit. Pl.III fig.6.
44. For an example of an iron tripod from the north see
Marshall, loc.cit. 1951 Pl.162 No.5.
45. Rea, loc.cit. "Iron Objects" Nos.88, 90 & 95.
46. Branfill, R.B. Ind. Ant. X p.1-12, 1881.
47. Walhouse, M.J. Ind. Ant.II p.273 ff.
48. D.G.A's Report 1918-19 Pls.99-106.

49. Rea, loc.cit. "Iron Objects" No.22.
50. ibid No.35.
51. Branfill, loc.cit.
52. Rea, loc.cit. Nos.29-41.
53. Marshall, loc.cit. 1951 Vol.II p.546.No.65.
54. This type survives in the modern iron industry of many parts of India. c.f. Roy, S.C. The Kharias, Pl.VIIA, 220,& p.102.
55. Elwin, loc.cit.p.201 and fig.27.
56. For Egyptian parallels see Petrie, loc.cit. Pl.VI.
57. Rea, loc.cit. "Iron Objects" Nos.362,365.
58. Hunt papers and photograph collection, S.O,A.S.
59. Logan, W. Malabar Manual, 1906.
- 59a.Sahni, D.R. Archaeological Remains at Sambhar. Pl.XIVb.
60. Rea, loc.cit. "Iron Objects" Nos.385-394.
61. Janampet-see A.R.H.A.D. 1940-1 p.13.
62. Rea, loc.cit. pp.8-21.
63. ibid p.3.
64. Brecks, loc.cit. 1873.
65. A.R.H.A.D. 1915-16 pp.6-10.
66. Hunt, papers and photograph collection.
67. Carey, J.J. P.A.S.B. 1871 pp.238-9.
68. Taylor, M. loc.cit. 1941. p.70
69. ibid p.73.
70. Hunt Collection: Raigir, grave XIV.
71. Branfill, loc.cit.
72. Rea, loc.cit.
73. Hunt, loc.cit. 1924.

74. Newbold, J.R.A.S. VII, 1842 pp.113-128.
75. ibid pp.113-118.
76. A.S.A.R.(S.C.) 1914-15.
77. Taylor, M. loc.cit. 1941, p.93.
78. Richards, F.J., J.R.A.I. LIV p.157.
79. Rea, loc.cit. pp.45-6.
80. Wheeler, A.I.4. p.266;
 Caton- Tombs and Moon Temple of Hureida;
 Thompson, G. Zimbabwe;
 Leakey L.S.B. Stone Age Culture of Kenya Colony, etc.
 For the etched carnelians Dikshit, M.G. Etched Carnelian
 beads in India, 1949, gives a useful summary of the
 evidence available.
81. Foote, I.P.P.A. pp.124-5.
82. Beck, H.C. Man, 1930, No.134.
83. Chandravalli, see above p. and A.I.4;
 Coimbatore, see Ind. Ant.II p.241.
84. Morgan, C. Ancient Society pp.4-7.
85. Taylor, M. ibid 1941 pp;86-7, quoting Pelley.
86. Unpublished note of Dr. E.H. Hunt, now in Hunt Papers,
 S.O.A.S.
87. Iyer, L.A.K. Mysore Tribes and Castes - Panchalan; and
 Thurston, E. Tribes and Castes of S. India. Kammalan and
 Kammara.
88. Codrington, Man. Oct. 1930. No.139.
 K. de b.
89. Holder, E. J.I.A.I. VII.
90. Pudukkottai State Manual Ch.XXII.
91. Rea, A. A.R.A.S.I. 1908-9, pp.90-1. The urn
 contained red and black ware similar to
 that from Perumbair.
92. Cammiade, L.A.Man, Oct. 1930. No.135.
93. Holder, loc.cit.

94. Unpublished paper, probably by Wuchope in Hunt papers, S.O.A.S.
95. A.R.M.A.D. 1917.
96. Branfill, loc.cit. fig.III.
97. Walhouse, M.J, J.R.A.S.VII. N.S. p.31.
98. Gupta, K.K. 'Megolithic Monuments of the Cochin State.
Sen, J.I.Anth.I. 11, 1939-40, pp.106-8.
99. Aiyappan, A. Rock Cut Tombs at Feroke, S.Malabar,
P.I.S.C.1933; and
Logan, W. Malabar Manual, 1906.
100. For a solitary storage jar of shape approaching the piri-
form urn, see Excavations at Bhita, D.G.A's Report 1909-10
pl.397.
101. Codrington, loc.cit. 1930, p.191.
102. ibid. fig.I, III.
103. ibid. fig.I, IV.
104. Ind. Ant. IV p.12.
105. Branfill, loc.cit. Pl.II No.15, Pl.III No.17.
106. A.I.4. p.213.
107. Logan loc.cit.
108. Richards, F.J. J.R.A.I.LIV p.157.
109. Foote, I.P.P.A. No.2886-7.
110. Codrington, loc.cit. p.193.
111. Logan, Malabar Manual, 1906.
112. Longhurst, A.H. A.R.A.S.I. 1911-12, pp.159-60.
113. Jouveau Dubreuil, G. Vedic Antiquities, 1922, figs.3-5.
114. Rowland, B. Art and Architecture of India, p.22.
115. Iyer, L.A.K. loc.cit. 1948, p.29.
116. Logan, W. Ind. Ant. VIII 1879, pp.309-13.

117. A.R.S.I.E. 1912. pt.11 p.57;
A.I.O.C. 1920 pp.327-48; A.I.O.C. 1924 pp.275-300;
A.I.2. pp.109-16.
118. As at Chik Jala, Mysore, in published paper, probably
Wuchope, in Hunt Papers, S.O,A.S.
119. As at Gajjalalu Konda, Kurnool Dt. A.R.M.A.D. 1914-15,
pp. 39-41.
120. As at Odogattur, N. Arcot Dr. Richards, F.J. J.R.A.I.
p. 157.
121. As at Brahmagiri, Mysore, Wheeler, A.I.4. p.188.
122. As at Raigir, Hyderabad, Codrington, loc.cit.1930 p.194.
123. As at Motamurree, Hyderabad, ibid p.194.
124. As at Maul Ali, Hyderabad, ibid, p.193.
125. Benkal, Raichur Dt. Site 6 above Chs. II and III.
126. As at Savanadrug, Branfill loc.cit.
127. Shivapur Nort , Raichur Dt. Site 92 above ch. III.
128. As at Jivarji, Gulbarga Dr. Taylor, M. loc.cit. 1941
pp.13-14.
129. A.I.4.
130. Rivett-Carnac, loc.cit. p.1-16.
131. Smith, V. Ind. Ant. XXV. p.187.
132. Pudukkotai State Manual, Ch. XXIII p.522-3.
133. A.I.5. p.37.
134. A.I.4. pp.196-8.
135. Taylor, M. loc.cit. 1941 pp.13-15.
- 135a.A.I.4. Pl. XCVII, XCX etc.
- 135b.ibid fig.5.
136. J.R.A.I. LIV. 1924.
137. Aiyangar, S.K. Manimekhalai in its historical setting,
1928;
Dikshitar,V.R.R. Silappadikaram, 1939.

138. Srinivasan, K.R. A.I.2. p.9 ff.
139. Karu-nātar has been taken to mean 'high-land':
Mysore Gazetteer. I pp.254-7.
140. Puram, 239.20-1.
141. Siva Raja Pillai, loc.cit. p.42.
142. A.I.2. pp.14-15.
143. Codrington, loc.cit. 1930 p.195.
144. Thurston, E. Ethnographic Notes p.143.
145. ibid p. 142. 146. ibid pp.157 ff.
147. Harkness, Aboriginal Races Inhabiting the
Neilgherry Hills, 1832.
148. Thurston, loc.cit. pp.143-4.
149. Rivers, W.H.R. The Todas, Ch.XV and Ch. XVI.
150. ibid pp.349-50.
151. ibid p.380.
152. Thurston, loc.cit. p.156.
153. ibid p.201.
154. ibid pp.199-201.
155. Childe, V.G. Megaliths, A.I.4. pp.5-13.
156. Carter, H.J. A Geographical Description of Certain
Parts of the S.E.Coast of Arabia.
J.B.B.R.A.S.III 1851, p.224 ff.
157. T.G.S.B. VIII pt.2. p.207.
158. Philby, E.St.J. Sheba's Daughters.
159. ibid p.42.
160. ibid, p.54. 161. ibid pp.371-4.
162. ibid, p.427. 163. ibid pp.434-6.
164. Meulen, Van der Hadramaut, Some of Its Mysteries Un-
& Wissman. Veiled pp.145-6.

165. Caton-Thompson, loc.cit.
166. Rathjens, C. & Voris~~ham~~ische Altertumer, 1932, pp. 76-7.
Wissman, H.V.
167. Musil A. The Northern Hegaz, pp. 175-6 & fig.67.
168. ibid p.16. 169. ibid p.198 & figs. 76-8.
170. Musil, A. Arabia Deserta p.141.
171. Breeks, loc.cit. Ch.VI.
172. Grigg, H.B. A Manual of the Nilgiri District.
173. Breeks, loc.cit. pp.20-1.
174. ibid Catalogue No. CLXI.
175. ibid Catalogue.
176. Grigg, loc.cit. p.216.
177. S'atapatha Brāhmaṇa III 6,4,16 etc. refers to Yama as
presiding over the southern quarter which is elsewhere
stated to be the quarter of the fathers.
178. Tamil Lexicon.
179. Zimmer H. Myths and Symbols, pp.192-3; and
Ayyar, C.V. Origin and History of Saivism in
Narayana, S. India.
180. Taylor, M. loc.cit. 1941 pp.36-42.
181. ibid pp.33-4.
182. Mahadevan, A Note on the Archaeological Remains,
Apx. II.
183. A.R.H.A.D. 1939-40, p.44.
184. Subba Rao, loc.cit. 1949, p.64.
185. A.R.M.A.D. 1942, Pl. XLV fig.1.
186. A.R.A.S.I. 1913-14, 1914-15.
187. Bhandarkar, D.R. M.A.S.I. 4.
188. J.B.B.R.A.S.1851, Vol.III; T.R.I.A.1862 Vol.XXIV pt.111.
189. A.I.5. p.39.

190. ibid. p.35.
191. Manimekhalai, VI.63.
192. Tolkappiyam, Por 60; Purunānūru, many times;
Ahanānūru 131, etc.
193. Rivers, loc.cit. pp.349-50.
194. Thurston, Ethnographic Notes. pp.155-6.

CHAPTER IX.

THE PRE-MEDIEVAL CULTURE, A AND B.

CHAPTER IX.

THE PRE-MEDIEVAL CULTURE, A and B.

1. The Settlement.

Whilst the pottery of the post-neolithic and pre-medieval cultures has many common features, the distinctness of the two cultures is nowhere clearer than in the nature of the settlement. In addition to 15 of the earlier period, there are no less than 12 new settlements identified.

We shall describe first of all the settlement as it developed at the older sites, and then as it appears at the new.

Of the former group, the market towns of Maski and Kopbal now predominate, whilst the village sites Nos. 7, 57, and 91 are typical. At all these, there is a crystallization of the settlement area into a compact unit. The process is most clear at No. 57, Rodalkunda. Here the settlement is confined to the northern side of the saddle (Pl. 38b). At Piklihal, a similar process is clear. At Kopbal (No. 36) the main centre of occupation seems to have shifted and develops in a compact area which lies partly under the modern town and around the foot of the fort rock on the plain land. (Pl. 39). At Maski (No. 47) the change is even more striking, for the new town grows up on the banks of the river to the north of the hill, again on the level ground. (Pl. 40).

The same pattern can be clearly followed in the new settlements that were established in this period. At Manvi a small town seems to have been established on the N.E. of the saddle partly under the modern town. (Pl. 36a). At the adjacent sites of Kavetal and Sirwar (the former appears to be the later of the two, dating from the Pre-Medieval B period) large villages are established on the open ground between, or partly surrounded by, hills. Thirdly, an entirely new pattern of sites occurs at Nos. 32, 80 and 92. At No. 32 Karatgi, the village is founded upon the open ground far away from any hill. It is moreover almost surrounded by black cotton soil. (Pl. 38a). At No. 80, Jamshed, the only major settlement site so far discovered in the eastern part of the district, the area known as Potla Pahād (Place of Buffaloes) is upon a small eminence a few feet above the nearby stream. No. 92, Potanhal, is on the plain bank of the Maski nullah. The village occupied exactly the site of the modern one (Pl. 30). It is interesting to note that the Tungabhadra-side cave sites at Shivapur and Anegundi apparently continued to be occupied.

Thus we see that the pattern of the rural settlement in the district is already fully developed during the early part (A) of this period. We may find that in later times the village has shifted from the exact site of the pre-medieval, but nonetheless, it is generally true that all the elements of the modern village now appear for the first

time. The villages of modern Raichur, although the great majority are much more recent in foundation, owe their essential characteristics to this period. A very small percentage has maintained their hillside-terraced-character, which as we have seen is a relic of the Neolithic and Post-Neolithic village. An example of such a one is Kalmala, a few miles east of Raichur town, on the Lingusugur road. (See Pl. 14a).

Another point of interest is the relative size of the settlements in the various periods. Thus in the Neolithic Piklihal and Maski are unquestionably the most important sites, whilst Kallur, Billamrayan gudda and Rodalkunda are secondary. In the post-Neolithic, Maski dominates and Kopbal, Piklihal and Kallur are of second grade; whilst in this period Kopbal and Maski stand together. Piklihal has apparently fallen right away, and Manvi and Kallur are in the second grade. Jamshed (No. 80) may be said to qualify now as a second grade town. It is very probable that these first and second grade towns form district and market centres, whilst such sites as Rodalkunda and Karatgi are large villages, and Potanhal and the Tungabhadra sites - hamlets.

Little can be said of the house in this period. It seems certain that in the smaller villages and old settlements it remained similar to that of the previous period. On the other hand, there is evidence at certain sites of important changes, and the introduction - for specific pur-

poses - of new building methods. Thus at Kopbal near the Pālkigundu inscription traces of buildings of burnt brick were found. A brick measured 14" x 7" x 3". In the same spot, tiles of the type familiar in excavations at Kondapur and Kohlapur were found.¹ The bricks compare in size with those of Sātavāhana date at Kohlapur.² No trace of structural remains was visible in the main Fort site at Kopbal. At Maski excavations in the Site H and Suli Dibba area revealed buildings of burnt brick, examples of stone masonry with iron cramps, and terracotta ring-wells. The ring-wells have also been reported in Sātavāhana context at Kondapur, (p.105) and may be compared with finds at Arikamedu (above p.109). Another feature which is reminiscent of Sātavāhana methods at Kondapur is the floor of burnt earth at Piklihal Site VII. The report on the excavations at Maski has not yet been fully published.

2. Food and Agriculture.

The collecting of the scattered population into villages, the increase in the number of settlements and the obvious growth of the settled area at such centres as Maski and Kopbal make natural the inference that there was a fairly rapid increase in population in this period. It is probable that the resulting demand for food could not be met by the old hoe and garden terrace technique of the Neolithic period, which, it has been concluded, survived into the post-Neolithic.

The need, therefore, was to expand the area under cultivation, and the black-cotton-soil would be the natural ground chosen. The spongy soil and the comparatively larger areas under cultivation make it probable that the plough was introduced at this period. Since the time was one of outside influence and contact it is interesting to notice the plough occurring on coins of the Andhra Dynasty which in the Deccan was responsible for much of the influence. It has already been noticed that the cotton soil is difficult to work, and that the new settlements of this period do not confine themselves to hills which provided the lighter soiled garden terraces. The assumption of the introduction of the plough is not therefore so arbitrary as might otherwise appear, and in any case the problem of the introduction of the plough must be seriously considered.

There is no archaeological evidence for the introduction of the staple cotton crop which today plays an important part in the district's economy. The evidence of the 'Periplus' for the importance of cotton in the Ter region in the northern Deccan must therefore be noticed.³ The presence of numbers of pierced pottery discs in the wares of this period may be taken as indications of spindle whorls, and it seems fair to assume cotton spinning.

It may be assumed that the cow and buffalo assumed at this period the place traditional to them in the Deccan economy. It is, however, not clear how far there was a

specialized pastoralism of either animal of the sort found among the modern Todas. The buffalo-headed urn found at Hunkunti grave site perhaps indicates the association of this animal and Death noticed earlier. (Pl. 35b).

The introduction of the plough and the adoption of a new type of cultivation does not indicate an abandonment of the older ways. In fact it is probable that terracing and levelling of fields in hill areas was carried on on a larger scale than before. There is no archaeological evidence for this, but at Kopbal, Maski, Piklihal and Manvi, large fields were noticed on the hills or in hollows between them which rely on larger scale stone walling than any of earlier date. As the material remains of the period are among the richest of any of the ancient cultures of the district it may be assumed that these works were undertaken at this time. The town site of Kopbal was now established at a considerable distance from the stream, and it is likely that the two smaller tanks in the region of the fort date accordingly (Pl. 39). The same is true of the Manvi tank (Pl. 36a). At Kopbal and at Piklihal there are also traces of wide levelled 'ways' around the foot of hills, and at Piklihal of a ramp leading up the side of a hill (Area K) to the levelled 'castellated' top and to excavated and natural caves. (Pl. 45). This ramp was probably intended as a way for cattle, and it appeared well suited for this purpose.

All these indications make it clear that the stone

built irrigation tank must have become a standard concomitant of town and village during this period. Small bunds built out from the foot of hills are noticed at many sites; Piklihal, Kallur and Rodalkunda as well as the grave sites already mentioned (Nos. 6 and 73 above). A tank of this sort exists at Brahmagiri, whilst the larger, nautral-valley type of tank noticed at Kopbal and Manvi resembles the tanks at Chandravalli, one of which seems to be referred to in the inscription of the Kadamba Mayūrasarman (above p. 95). Further evidence of widespread irrigation for agricultural purposes has been already sought in the proximity of grave sites to modern tanks noticed also outside the district by Krishnaswami (above p. 233).

3. Technology.

a). Stone. The use of microlithic blades, almost all unbacked, of crude workmanship as strikelights and even perhaps as tools, is indicated by the numerous sites of this period at which they were discovered. In particular the Tungabhadra sites explored by Subba Rao and Foote (above p. 1019) seem to have been small factories conveniently located by the river bank and certainly occupied in the earlier part of this period (A). It is probable that certain elements of the population continued to use their old tools, even after they were obsolete among others. This seems to be the only possible explanation of the stone

axes found at Kondapur, Bhita and many other historical and datable sites, and must be in the case of Piklihal.

b). Metals. It is almost certain that the iron typology described above continued in use throughout this period. The only means of ascertaining its concluding dates would be to find the origin of distinctively northern types, which succeeded it. Although this is outside the scope of the present study it may well be that the advent of the Muslims was connected with the change.⁴

The evidence for a development in iron technology of great importance must now be mentioned. Both in the district and in neighbouring districts numbers of crucibles occur, probably in every case in pre-medieval context. These crucibles are of uniform size and shape. They were found at Chandravalli by Krishna and one example was sketched by the writer in the Mysore Department Museum. In Raichur specimens occurred in probable pre-medieval context at Kopbal and at Sirwar, whilst others occur at Maski (Pl. 108).

The significance of these crucibles is that they make possible a major refinement of the primitive iron smelting mentioned in the previous chapter. This is the manufacture of the famous "wootz" steel by the cementation process. The word "wootz" is generally accepted as a corruption of the Cananese "ukku" meaning steel. Its first use is attributed to George Pearson in 1795.⁵ Neogi mentions Hyderabad

Mysore, Salem and parts of Madras as the main centres of the industry in recent times.⁶ The antiquity of this work in India is suggested by the literary sources. Ktesias (5th cent. B.C.) mentions the gift of two swords of Indian steel by the King of Persia, although these probably emanated from a N. Indian source. More important are the references of the Periplus (1st cent. A.D.) to Indian steel exports from Ariaca to Abyssinia, whilst ferrum indicum is referred to among dutiable articles in lists of Marcus Aurelius and Commodus. From the times of Idrisi (12th century) there are constant references to the Deccan steel. Tavernier associates it with Golconda, whilst Voysey refers to the famous Kona gamudram works.⁷

The essence of the process, according to all accounts, may be summarised thus: pieces of the wrought iron are cut off and placed in a crucible of about 6" length and 2"-3" internal diameter. With it is put a handful of certain leaves, twigs or rice husk, and the crucible mouth is sealed and carefully luted with clay. A number of the crucibles are then placed in a furnace with charcoal fuel and heated for 4-6 hours. The crucibles may then be quenched with water and the cones of cast steel removed. It may then be treated again in closed crucibles to control the carbon content before being worked.⁸

There is very little direct evidence for the uses of other metals, although a wide range of bronze objects,

assignable to this period were found at Kolhapur.⁹.

There is, in the B period, a marked diminution in the range of pottery forms and this process is even more marked in the medieval period. It is possible to infer from it that the use of domestic brass-ware now became widespread although the poverty of this material is a marked feature.

c). Stone Dressing. The first appearance of hewn masonry during this period is one of the probable results of the development of steel. This conclusion is supported by architectural and sculptural evidence from outside the district.

d). The technology of the pottery ascribable to this period has been discussed in Chapter V. We may specially note the multiplicity of forms occurring during the A period and their diminution in the B. The pottery of the A period shows close affinity with that of the other sites of the region (Brahmagiri and Chandravalli). It shows also an equally close resemblance to forms from Arikamedu. The number of identities found in the wares of Taxila and Kohlapur is correspondingly much lower, and in the case of the former may be said to be confined to certain inter-provincial key forms that occur about this time in an almost all-India role. (Pls. 86-89 etc.)

4. Trade and Communications.

a). Objects assignable to this period, found in Raichur and in neighbouring district, suggest an important change in contacts with the outside world. For the first time they indicate the status of certain sites as centres of wealth: the presence of luxury items indicates the greater range of power of the ruling class. The "rouletted ware" familiar at Arikamedu, Chandravalli and Brahmagiri, and at Sisupālgarh in Orissa, also occurred at Kopbal (site No. 36 above). This ware is also found at Kondapur.

The polished red-ware, characterised by the necked vessel, sometimes with air-vent,^{occurs} at Maski, Kopbal, Piklihal and Kallur. Outside the district it is familiar at Kohlapur,¹⁰ Kondapur, Amreli, and in wide range of sites from Taxila in the north, to Sisupālgarh in the east (below p.327). A more local type of luxury article is the distinctive moulded terra-cotta figurine found in great quantities at Kondapur and also known from Paithan. This occurs in small numbers at Maski and Kopbal, whilst a more provincial type of terra-cotta figure often in a ware allied to the B1 occurs at Maski and Karatgi. (These figures are interestingly paralleled by some found by Krishna at Chandravalli).

The occurrence of Sātavāhana and punch-marked coins at Maski is an important indicator of the greater extent of outside contacts.

It is unfortunate that there is no archaeological evidence for the main trades of the district. The importance of the large iron deposits, the gold deposits, and the possibility of cotton production, can only be gauged by the presence of the various luxury objects known to have been imported to the district, and by the great quantity of material remains that must be assigned to the 'A' period.

b). There is no definite evidence of the use of wheeled transport in Raichur, but it may be safely inferred. The possibility of noting regular routes and even roads at this period must also at present rely upon inference. In Raichur District it has been shown that many sites were occupied first in the Neolithic period and continue to be occupied with certain minor changes, until the present day. Maski or Rodalkunda are typical examples. Other sites, possibly from new historical factors or political expediency have been founded in later periods and usually continued to be occupied. This is often true in other parts of India, and where it is not, special factors can often be called to account for the abandonment of the site. The fact remains that many sites appear to have been continuously occupied since very ancient times. One implication of this continuity is that the routes that linked the centres of trade and population are also ancient, and in some cases at least the modern still follow the ancient routes. In this

respect geographical considerations are prominent, and help to fix the routes in time and place. Among such considerations, natural harbours, mountain passes, river crossings and wells are positive, whilst mountain and hill ranges, forests and deserts are negative. Thus it is that the road and rail routes of modern India often lie close to their ancient counterparts - a fact easily established by a study of Clunes' Itinerary, the earliest of its kind in India, and demonstrated in the northern Deccan by Codrington.¹¹

Raichur is a 'doab' and therefore the main fords or crossing places on the bounding rivers can be established. It straddles the Deccan plateau - to its west the hills, valleys and forests of the Ghats develop, to its east the rivers flowing to the coast are more numerous and their tributary nallahs are more difficult to cross. With such a position it is to be expected that the main routes passing through the district will be in general on a north to south line. East of Raichur town the only concentration of sites lies around the railway which links Gadwal and Kurnool. This paucity of sites is probably to be explained by the Telegu/Kannada language frontier and the comparative density of forests. There is no likelihood of any major route in the eastern part, excepting one which followed roughly the railway. The main access to the district today is by the Krishna Bridge and the Raichur to Yadgir Railway.

These ~~bitid~~ges correspond with two important groups of sites (Gudabelur and Krishna Bridge) and probably mark the ancient route. From here two main lines of sites suggest routes. The southern via Kallur, Potanhal, Rodalkunda, Karatgi to Gangavati and thence either west to Kopbal or south to Anegundi or Mampli crossings of the Tungabhadra. From Kopbal a road ran south to Hampi Sagar. The northern route ran direct to Sirwar (via Gabur), Navalkal, Kavital, Kotekal, Lingsugur (Billamrayan gudda). From Kavital a branch road ran south west to Maski. The third main crossing point appears to have been at Tathni, an ancient site on the north bank of the Krishna on the Surapur-Lingsugur Road. This road seems to have run south to Billamrayan gudda and there divided, an eastern arm going to Maski and thence probably to the modern Sindhnur, fording the Sindhnur nullah and joining the southern route. The western arm ran due south to Piklihal (Mudgal) and thence probably via Kushtagi to Kopbal. (See Pl. 9).

The significance of these routes must now be viewed in the wider perspective of the peninsular and of India as a whole. Kausāmbī forms a sort of pivotal point. Eastwards are the river cities of the Ganges valley and the route to Orissa and the East Coast sea routes. Northwards are the routes to Mathura, Delhi, Taxila and beyond to Afghanistan. Westwards the road lay through Sanchi (and Vidisā) to Mahismatī and the Narbada crossing and thence

to the Gujerat coast, Sopara, Bombay, Bharukacca and Surāsthra. From the view point of commerce this group of northern routes is focussed on the Ganges valley and the west coast ports. A second group of points of ~~hous~~ comprises the Tamil plain, the Andhra coast ports, and the Deccan plateau. From Bharukacca or Mahismatī the road lay south to Paithan, commanding the Godavari crossing. From Paithan S.S.E. to Ter, important as the junction with the Poonah-Bombay Road on the one side and the division of the southern road on the other. The main coast-to-coast road now ran via Kondapur, to Jaggayapeta and the coast near Masulipatanam. The southern branch ran via Shahpur to Tathni and so joined the Raichur western route. It then ran southwards to Bellary and the Mysore highlands, crossing as it did so the east-west road that ran from the Andhra coast via Vinukonda to Yerragudi, Bellary, Kopbal and Marmagoa on the line of the modern railway. That there was an alternative route to the east coast seems attested. This route left Raichur at the Krishna Bridge, ran N.E. along the modern road to Mahbubnagar, and there probably turned eastwards and ran via Devarkanda to the coast. It is probable that a branch continued N.E. to meet the main route. Similarly it is probable that from Shahpur in Gulbarga District the western route forked and a branch ran in an eastern direction towards Kondapur.

12.

Gordon has suggested another route running south from Kausāmbī to Bhita and thence to Tiwar on the upper Narbada. Such a route would pass near the ancient site at Bharhut as Richards had suggested,^{13.} but it is not clear whether it would have continued through the forests southwards and finally joined the main Paithan - East Coast route as Gordon indicates. The areas of N.E. Hyderabad that it would pass are archaeological blanks at present, and have every appearance of being backwaters into which primitive tribes have been forced to retreat. As such the suggestion that the road extended anciently beyond Jubbulpore is open to doubt. It is more likely that from Tiwar it would have turned west and followed the line of the Narbada to the coast.

From Mysore a road ran westwards to the Malab^ar coast, and its ports. Another road lead S.E. to the Tamil plain. (Pl. 5).

5. Population and Social System.

a). The prosperity indicated by the material remains of the 'A' period suggests that the population continued to increase. The new type of compact village is another indication that the population of the old sites had grown beyond the capacity of the scattered dwellings of the

earlier period. There are 27 settlements known at present, but it is possible that very many more may have passed unnoticed because they now lie beneath the modern villages. This becomes even more probable in the 'B' period when the village-pattern of medieval and modern Raichur was firmly fixed, and the agricultural methods were adopted which have continued almost unchanged till very recent times. The comparative poverty of the 'B' period remains may indicate a period of comparative stagnation and a less rapid increase in population.

b). The presence of imported luxury goods at the main centres of population suggests strongly that the 'A' period was one of external rule, and that a foreign governor may have been installed. This seems to imply the imperial administration of the Śatavāhanas, as the imported objects are ones that were in vogue at such centres as Kondapur and Paithan. This period of comparative stability and external stimulus saw probably the first impact of a specifically 'Aryan' social system upon the district. The earliest traits of N. Indian religion found in Raichur can be assigned to this period, and taken with the new modes of burial to be noticed below, indicate in no uncertain way, the process of change

6. Burials and Burial Customs.

The impossibility of making a hard dividing line between burials of the southern grave complex and any subsequent group of burials has already been noticed. The complex nature of the social groups we have considered has survived to this day and we have seen that burial is the general practise among many tribes and castes. This being so, it is clear that the graves of the complex cannot be said to have come into existence in any one period, particularly as the distinctive B1 grave ware survives in smaller percentages at sites that belong to the pre-medieval A and even B periods. It is, however, strange that the pottery types, found in the graves, reflect very few of the variations that occur in the settlements of this period. This would seem to indicate that the new ruling class was one superimposed upon the earlier society, and that those strata of society responsible for the spread of the post-neolithic culture now became partly traditionalized in respect of their burials. It is again curious that the unique cairn cemetery at Hunkunti should be almost the only grave site so far reported in the district to produce the distinctive B2 ware, and the indications of the other pottery illustrated from the main settlement on the south bank of the Tungabhadra ^{14.} supports the pre-medieval dating of the site. The absence of this ware in grave sites in

this area (it does, however, occur in the Coimbatore graves, see above p. 552) demands some explanation and at present
 15.
 Wheeler's statement that the B2 ware represents a new 'Andhra' period following a 'Megalithic' has been accepted by Subba Rao and others as implying that the graves are confined to the 'Megalithic' period. An alternative possible explanation, now advanced, is that the burial cult originated in an area where the painting of the red-and-black ware was not practised and that when it migrated to the northern Kannada region it was already remembered as a tradition that was not amenable to innovation. This provides a possible explanation for the virtual absence of the B2 ware in the graves. A somewhat similar phenomenon will be observed below.

The new burials take the form of the simple deposit of an urn with globular body containing cremation ashes. This undoubtedly signifies the orthodox ~~Aryan~~ rite of 'Sancayana' or collecting the bones remaining on the 10th day after cremation. The ashes are placed in a new earthen vessel and when possible disposed of in the Ganges, or some local representative of Ganges - when this is not practicable
 16.
 the pot is buried in a lonely place, or finally in any suitable place not too far removed from the settlement. (Sites 47, 36 and 91).

This practise, which is still the norm throughout the subcontinent, generally employs a globular water-pot for the collecting of the bones. In Raichur, these urns first occur in B3 ware of red or reddish brown. At Maski large numbers of such urns occurred in Sultan Mohammed's Field in apposition to the Megalithic burials which lay beneath them. Fragments of urns of similar type occurred at Kopbal below the Malimalappa hill, and in some few cases in the caves near the cist graves. The form of the urn seems to have run right on for it is common in the Malimalappa caves in the 'D' wares. In some of the examples from Maski the urn had been placed under a small slab of stone. Meadows Taylor reports at Andola, Rajan Kollur and again at Narkaipalli that sometimes smaller vessels containing calcined bones, often of children, occur as secondary deposits outside cists or sometimes (as at Rajan Kollur) inside.^{17.} He supposed that these remains demonstrated two contemporary sects with different customs. Munn reported calcined bones and ashes in some of the grave he opened at Lingsugur.^{18.} It is interesting that among the pottery finds from these graves were small saucer lids with incurved rims (Pl. 74 Nos. 12.).^{19.} This type of lid appears at Brahmagiri in cist graves, but occurs in neither the 'Megalithic' levels of the Brahmagiri or Chandravalli settlement excavations. In the Lingsugur

graves it occurs alongside the B1 black conical lids, but unfortunately there is no record of the actual find spots of the various objects and it is possible that they came from different graves.

There does appear to be in these reports some indication of a fusion of two burial customs, and such a fusion clearly suggests a date within the pre-medieval A period.

CHAPTER IX: NOTES AND REFERENCES

1. Sankalia, H.D. J.B.B.R.A.S. XXVII pt.1. Pl.VII(a), and
Sanakalia & loc.cit. 1952 p.31.
Dikshit,
2. ibid p.32.
3. Schoff, loc.cit. 1912 p.51ff.
4. Sankalia and loc.cit. 1952 p.121 ff: The Bāhmani-
Dikshit, Silhāra objects seem to indicate just
such a fusion of new elements (socketed
pick, keys etc) with the older types.
5. Hobson - Jobson, p.972.
6. Neogi, P. Iron in India. p.65.
7. ibid pp.66-7. 8. ibid pp.72-4.
9. Bhandarkar, R.G. Memorandum on Some Antiquarian Remains
found in the Brahmapuri hill, near Kohlapur, J.B.B.R.A.S.
XIV, 1878-80.
10. Sankalia, & loc.cit. 1952 p.82.
Dikshit,
11. Codrington, K.de Ancient Sites near Ellora. Ind.Ant.1930.
B. pp.10-13.
12. Gordon, D.H. J.R.A.I.LXXX p.76.
13. Richards, F.J. Ind.Ant.1933.
14. Subba Rao, loc.cit. 1949 Pl.42 Nos.15-23.
15. A.I.4. p.309.
16. Padfield, J.E. The Hindu at Home. pp.203-4.
17. Taylor, M. loc.cit. 1941, pp.21,23,68-70,88-9 etc.
18. Munn, L. A.R.H.A.D. 1927-8 p.30.
19. A.I.4. p.211, c11 etc.

C H A P T E R X..

THE MEDIEVAL CULTURE: SOME ASPECTS

CHAPTER X.

THE MEDIEVAL CULTURE: SOME ASPECTS

1. The Settlement.

1.

Subba Rao contends that in Bellary and Anantapur Districts there was a shifting of the "centres of habitation at the end of the Andhra period". This contention is based mainly on the fact that Foote did not collect medieval pottery at the sites from which the earlier pottery of his collection was obtained. Subba Rao concludes that as many as seventy sites were abandoned whilst only a few, such as Brahmagiri, seem to have been continually occupied. It appears that the evidence on which this view is based is unsound. It has been already noticed that the period of Sātavāhana contact in Raichur District corresponds with the Pre-Medieval A, and that thereafter follows a comparatively poor period - the B. It appears that nearly all sites occupied in the first part of the period continue so in the second, although generally speaking the material remains are less numerous. The true point of a shifting of the centres of population (in Raichur) is between the latter part of the pre-medieval and medieval periods, and this change, when it does occur, is in most cases of exactly the nature described by Krishna at Brahmagiri.^{2.} The material signal of the change is taken to be the appearance of the 'D' wares and the final disappearance of

the old 'B' wares. A contributory factor to the impression that new centres received the population whilst old were abandoned may also be that the period now commencing undoubtedly saw (in Raichur) the greatest increase of new settlements dating from it. These settlements for the most part follow the new pattern that was noticed at sites 32, 80 and 92 in the previous chapter. We shall now consider the historical development of the settlements which were already occupied in Raichur district.

Typical of the new settlement is Rodalkunda (No. 57) (Pl. 38b). The site is about a furlong E. of the saddle which held the pre-medieval village, and has been apparently occupied continuously from its settlement. At Kallur (No. 30) the medieval village is similarly situated about one furlong E. of the saddle that had housed the earlier settlement. Here it seems probable that the move resulted from the construction (in Chalukyan times) of a temple at the eastern extremity of the saddle. (Pl. 37a). At Manvi, (No. 86) a similar expansion seems to have taken place (Pl. 36a). At Maski (No. 47) it appears that the modern village, lying to the E. of the hill, on the S. bank of the nullah, was also founded in the medieval period. A careful search of the nullah bank here revealed no trace of an earlier occupation and the older areas of settlement seem now to ^{been} have/abandoned. (Pl. 40). At Kopbal the village seems to

have expanded to the S. and E. of the fort rock, and finally takes its modern form astride the road that runs S. to Katarki (Pl. 39). At Piklihal (No. 91) the area C was converted at some time into a small fortified village. It seems probable, however, that the diminishing importance of the site coincides with the foundation of a new settlement around the fort of Mudgal some 2 miles to the north (Pl.45). At Billarayan^m gudda a small fort was built to the N. of the hill, but it seems that the main settlement shifted some two furlongs east to Karadkal, benefitting from the large new tank that lay between it and the older site (Pl.22). At Potla pahad (No. 80) a small fort was built on the old village site, but it seems likely that this site was abandoned as a settlement when the new centre sprang up around the fort at Gadwal. There is no trace of pre-medieval settlement in the area of this latter fort. Similarly the village of Jamshed, lying about a quarter of a mile S.W. of Potla Pahad appears to be of quite modern foundation.

The medieval period brought to a close a lengthy period of peaceful stagnation. The coming of the Muslims and the rivalry of the Hindu medieval empire centred upon Vijayanagar, gave way in turn to the Inroads of the Marāthas^{3.} when, for instance, Sivaji held for a time Kopbal (c.1680). The instability of government continued for many years and Raichur district must have suffered continually. It is not

therefore unexpected that this is the period of great forts at Raichur, Mudgal, Kopbal and Manvi. It is worth noting, however, that it is to this same period that the tiny fortified villages belong: Potanhal is a good example, Karatgi another. At hardly one of the earlier settlements are there no traces of fortifications, and although we were not able to study and date them they are evidently signs of the troubled times.

We may conclude by noticing that in most cases the older centres seem to have retained their stature. Thus Kopbal and Maski continue to dominate their neighbours, whilst only in special circumstances new centres gain importance. Thus Raichur itself grew up around the great fort and no trace of pre-medieval settlement could be found. The importance of the site lay in its control of the junction of two routes. Kanakgiri gained its importance only under the patronage by the Rajas of Vijayanagar or the Nayaks of Hulihaider. Sindhnur and Gangavati both appear to be comparatively modern settlements owing their importance to their command of routes and fords. If the older towns and villages appear to have lost their ancient importance as has Hampā sāgar, Rayadrug, or even Bellary in Bellary district, it does not necessarily mean that they were abandoned or dwindled in size. It merely indicates that the society that

produced them has been outstripped by the appearance of the newer centres of trade and power.

2. Agriculture.

The essentials of the agriculture of the district were already present in the previous period. The developments that are now noticed are peculiar to a small number of sites and parts of the district.

a). Canal and anicut irrigation in the low lying land south of the Benkal forest is first attested by the Chalukyan inscription of Vikramāditya IV at Munītabad. (This inscription is of interest as showing the association of Benkal with Kiskindha at this date).⁴ This ^system of canals was further extended on both sides of the river Tungabhadra under the Vijayanagara rulers and further anicuts constructed, notably the great Ray canal and tank built by Krishna Rāy (16th century) and the Turuttu Channel, probably made by Bukka II (14th century).⁵ This irrigation made possible the cultivation of rice and sugar crops.

b). The constructions of large numbers of surface drainage tanks may be inferred from the many examples noticed in the previous chapter, and in particular the tank with Chalukya (?) inscription at Rodalkunda. A further light on the question would be shed by a thorough

investigation of the efforts that were anciently made to settle the Benkal forest itself. The village and fort of Shivapur are close to an ancient dam, and numbers of others were noticed on all sides of the Benkal (see Bilebhavi for description of one). South of Mugumpi, near 'Rāmaswāmi k̄a pahār' another large dam was noticed.

It appears from the numbers of villages constructed in the Benkal area, probably during the Vijayanagara rule, that there was at one time an effort to settle the forest. This plan must have accompanied the numerous irrigation projects and their failure seems to have brought about the abandonment of Bandikunta, Halekumala (correctly Halekunta) and Nagesanhalli villages. Local informants tell that these villages were abandoned through lack of water. The architecture of all three appears to be of a single period. At the foot of the hills behind the first and third villages large bands of stone (sometimes masonry) or earth were made. Around the second, several wells were excavated. All these tanks and wells were dry at the time of my visit (May). This view agrees with the known enthusiasm of the rulers of Vijayanagara for constructions. Thus Krisna Deva Rāya wrote in his Amuktamalyada that the prosperity of a state will only be increased by the construction of tanks and
6.
canals.

At Piklihal reference has been made to a number of large scale drainage and levelling works that are medieval (Pl.45). These large scale works are almost certainly later than the small catchment tanks built at the foot of hills and frequently connected to a little contour channel which serves the dual purpose of preventing erosion of the adjoining plain and supplying the tank.

3. Technology.

a). The metal industries were fully developed during the previous period, and it is probable that now only slight modifications of forms and techniques occurred. The great steel industry which developed in W. Deccan in the previous period now was centred to the north in the Nizamabad district, and Kona samudram became famous throughout the world for its Damscene swords. It is probable that this centre developed under Muslim patronage, for Raichur was for centuries the borderland of the Muslim North and Hindu South, under the Vijayanagara Kingdom. At the same time, probably under the latter dynasty, the iron industry was centred further south in Mysore.

b). Glass working became far more general than in the previous periods, although there seems consistent evidence for the manufacture of glass bangles since the pre-medieval

A period (e.g., Kolhapur, Chandravalli excavations, and the surface finds of similar bangles at many sites in Raichur and in the Piklihal excavations). The industry at Kolhapur in the Bahmani period produced numbers of polychrome bangles, parallels for which can be found in Raichur, usually in clear medieval, or at earliest pre-medieval B context. In Raichur, traces of glass manufacture were found at Karadkal in the shape of many bangles, and the sherds of the special 'crucible' pots used. The industry flourished in Mahbubnagar district until recent years, and a description of the furnace and processes involved is given by Krishnamurthy.^{7.} The date of the glass-bead industry in S. India is not yet established, but it may well antedate the bangle industry. Certainly much greater antiquity can be assigned to glass beads in N. India,^{8.} for at Taxila they occur in all levels of the settlements "from earliest to latest", but this provides little concrete evidence for the south as glass bangles also occur in early levels of the Bhir Mound.^{9.}

c). Stone Working. It is not clear when the rotary quern first appeared in Raichur district. The manufacture of this type calls for accurate chiselling and drilling, and it is probable that its introduction was roughly contemporary with that reported at Kolhapur^{10.} and dates from this period. No specimen of a legged quern is yet reported

from Raichur. The hollow mortar probably dates from the same period as the rotary quern - as at Kolhapur.^{11.} This is supported by its occurrence in natural rocks at several places in the district in probable medieval context. Marshall notes that the rotary quern first appears at Taxila^{12.} in the late "Saka - Parthian period".

d). Pottery. The technology and morphology of the medieval ware have been described in chapter VI. There is as yet very little published material with which the forms may be compared, but some links are noticed with forms of comparable date from Kohlapur and Baroda. A close similarity of wares and forms was also noticed with sites at Hampi, but until excavation and publication of material from these sites, little can be said about the possible dating of Raichur finds. (Pl. 90).

4. Burials.

The custom of cremation became doubtless standard among Brahmins, but among the lower castes and elements of society which embodied older traditions, burial was still regarded as correct. At several places cubic or rectangular stone graves were noticed which differ from the regular Muslim or Lingāyat burials. At Anegundi when shown the plastered stone monuments to the Rajas I was informed that they were buried as we prefer to bury those

of great repute. The proximity of such graves at Kopbal to caves occupied in medieval times suggests that they are sannyāsīs. There are in fact many sections of the modern community who regularly bury.

In these circumstances it is interesting to ask what relation these burials have with the southern grave complex, and whether there are any monuments that bear testimony to the late survival of these forms of burial. The following field observations appear relevant:

1. Walled structures occurring in conjunction with graves. Three examples are at present known; one from outside Raichur district.

a). At Valigunda on the bank of the Musi river near the 14 m.s. on the Bhongir-Nalgonda Road is an extensive cemetery of about five hundred cairn circles, two with a menhir on the N. There is here a rectangular enclosure (? walled) 144' x 87' with long axis N/S. This is divided into roughly two squares by a cross wall. In the centre of the N. enclosed space stands a single menhir 11' high, whilst on the southern wall of the S. enclosed space, in the centre, a semicircular construction 10' in diameter is built out.
13.

b). At Jamshed (see above Ch. III and Pls. 31-33) two other walled structures were noticed that also lay beside

cairn circle graves. The first of these was a rectangular walled area 76' x 27' with a platform across the W. end. The long axis was oriented E/W. The walls were faced carefully with squared stones with rubble infilling. The second "building" consisted of a square court of similar construction, 67' x 71'. On the outside of the S. wall stood a square raised platform with battered walls with a central square level area of 18'. There were traces of a further eccentric rectangular extension outside the N. wall. At the nearby settlement site of Potla Pahād a structure resembling the second of these was still used to house images and treated as a shrine.

The significance of these structures is not known, but they appear in every case to include some sort of platform, presumably for either images, or the depositing of corpses. Their relationship to the temenos idea has been already mentioned in Chapter IX. In the first examples the menhir seems to stand in the centre of the outer court - perhaps cognate with the Dīpa stambha in the medieval temples of Andhra. The third plan appears to have a definite resemblance to that of Temple 9 at Aihole. The platform taking the place of the garbhagriha and Sikhara and the square court being on the E. instead of the N.

The fact cannot be ignored that they occur in much

the same situation as the rough stone rectangles noticed above (p.484). On the other hand they also can claim connection with the "temple of the burial ground" - Śūḍukāṭṭu^{14.} Kottam referred to in Manimekhalai.

1. Medieval stone circle graves: a) about 1 mile S. of Muggumpi^{14.} l.B. is the great fortified hill of 'Rāmaswāmi kā Pahād'. A description of this monument is outside the scope of the present work, but distinctive stone circles were found at two places. On the plateau near the foot of the E. end of the N. hill there is a temple with Nandi bull. This temple closely resembles the Jain temples behind the great Pampāpatīswāmi temple at Hampi,^{15.} considered by Longhurst to date from the 14th-15th centuries. Behind this temple, on the now bare rock surface, but each containing a considerable depth of humus, are two stone circles of about 20' diameter. The stones are more closely set than in the regular circle grave. I could find no trace of any pottery (Pl. 16a). On the level plateau on the summit of the S. hill and E. of the Jain temples and the main fort (which contains a small and very much worn slab inscription) there was a probable third stone circle of 18' diameter. Here again there were no traces of pottery.

b). About 1 mile S. of Basappaṇa village^{15.} the road

14 Map Reference Long. 75° 23'. Lat. 15° 25'.30".

15 " " " 76° 29'. " 15° 26'.

passes a fortified gorge and emerges into a level plane with traces of a masonry "bazar" similar to those at Hampi. To the N. of this gorge on the E. of the valley there are stone wall foundations of a small village settlement. A few D ware sherds were found. There is also a small tank. On the N. side of the village is a small shrine with a Hanuman musti. This shrine is still cleaned and repaired. Behind the shrine, and in close proximity to it are a number of cairns and stone circles, varying in diameter from 8' - 20'. The whole appearance of these graves is quite unlike the regular cairn circle grave, and their proximity to the medieval settlement and shrine makes it very probable that they are also medieval.

The excavation of some of these graves is the only way of determining their age, and may yield important evidence of the later limits of this type in Raichur.

CHAPTER X: NOTES AND REFERENCES.

1. Subba Rao, loc.cit. 1949 p.178.
2. A.R.M.A.D. 1940 p.71.
3. Davies, C.C. Historical Atlas of India p.48.
4. Sastri, H.K. H.A.S.5.
5. Longhurst, A.H. Hampi Ruins, 1933 pp.46-55.
6. Mahalingam, Economic Life in the Vijayanagara Empire, 1953, p.49.
7. Krishnamurthy, L.S. J.H.G.S.IV pt.1. pp.79-83 & Pl.II.
8. Marshall, J. Taxila, 1951, Vol.II pp.471-2.
9. ibid p.684.
10. Sankalia and Dikshit, loc.cit. p.131.
11. ibid, p.131.
12. Marshall, loc.cit. 1951, p.487.
13. A.R.H.A.D.1940-1 pp.3-4.
14. Aiyangar, S.K.Manimekhalai in its Historical Setting p.125.
15. Longhurst, loc.cit. 1933 pp.94-6 and fig.44.

CHAPTER XI.

DATING THE CULTURES

A. THE RAICHUR CULTURE SEQUENCE

1. DATING THE NEOLITHIC A AND B PERIODS.

There is at present no means of providing any absolute date for these periods. A terminus post quem seems to be provided by the accumulation of A ware sherds in the Edict cave at Maski, but unfortunately there is now no means of determining the relation of A and B periods to the inscription, nor, indeed, the culture sequence of the Edict cave. The want of this vital evidence must be acknowledged. The proposed dating for the post-neolithic period does, however, support the post-Mauryan date for the termination of the Neolithic B.

At Piklihal the Neolithic B was characterised (Site VII) by a sequence of 10 clay occupation floors. The period seems to have followed directly upon the A period, and to have been followed (at this spot) by an interval in occupation before the new hut foundations of pre-medieval date. The interval may indicate that the terrace was under cultivation. The ten remakings may be compared with about 8 (?) stone wall rebuilding levels in Br 21 at Brahmagiri.¹ It seems possible that they represent a period of between 100 and 250 years, although any exact estimate is not possible. This guess would, however, take us back to a date between 100 and 250 B.C., and the lower of these dates makes it necessary to consider the tempting proximity of the Asokan

edicts and Mauryan intrusion. It is indeed possible, although quite unproven that the cause of transition from Neolithic A to B was this event.

The Neolithic A at Piklihal was represented by a thick layer of gritty sand. This appears to be the disintegration product of the granite rock (see above p.267). The occupation seems to have been in caves and on levelled or built rocky platforms. The presence of sherds and other remains at all levels of this thick undifferentiated layer, together with a child burial over 3'6" below its surface, seems to indicate that the whole deposit took place during the occupation of the area. This hypothesis is substantiated by the excavation of Site I at Piklihal. The layer in question produced specimens of a snail which has since been identified as a Japonia species and probably indicates a considerably higher rainfall and forest conditions in the now arid area. This fact provides a small clue for the possible duration of the A period. But without further evidence, no absolute dating is possible (see above p.269).

2. DATING THE POST-NEOLITHIC PERIOD.

This period is defined as beginning when red-and-black ware, iron and "megalithic" graves first appear in the district. All the evidence available suggests that these three features appear in Raichur at roughly the same time.

The upper limit of the period is fixed only by the fairly definite date of the commencement of the pre-medieval period (c. 125 A.D.) A terminus post quem seems to be set by the fact that the Asoka edict cave at Maski was filled, apparently after the date of inscription (c. 260 B.C.), by the debris of Neolithic occupation. (Above p. 170). It is a matter of regret that the excavation of this crucial point has not been more carefully recorded, and that the material evidence of a pre-Sātavāhana occupation of the south is at present limited to the finds of a type of "N.B.P." on the surface at Brahmagiri. It is perhaps permissible to mention that if traces of Mauryan intrusion are to be found in the south they are most likely to occur at the seat of provincial rule, Yerragudi, which if its identification with Suvarnagiri is correct must have been for a time the seat of an Āryaputra.

Before summarising the relative indications of the lower dating limit, we shall consider briefly the evidence of dating of the three component features in India.

- a). Red-and-Black Ware - occurs at Arikamedu in pre-Roman layers, and Casal has suggested a duration of 2 centuries for the occupation (above p. 111). This is the only certain pre-Roman date available in the Tamil plain. The range of forms of the ware shows close affinity to those of Brahmagiri and Raichur. It occurs at Sisupalgarh in the make-up of the defenses (Phase 1) and in the Habitation Site. In

both cases well below the earliest sherds of Rouletted Ware or (strangely) N.B.P. The forms are far less typical than those of Arikamedu, and indeed there are only three close resemblances.² Little can be said of the dating except that it occurs well prior to the 1st. century A.D., if this date is accepted for the Rouletted Ware sherds. It occurs at Rajgir,³ simultaneously with a silver-lustred N.B.P. sherd (Period II). This is the evidence for the dating 5th century B.C. - 2nd. century B.C. which the excavator ascribes to it at this site. There is no clear evidence of morphology, although Ghosh reports a persistent co-existence of the ware with Cl (N.B.P.) at the site. He also claims that the similarities of forms indicate a common origin for the two wares.⁴ A flat bowl of red-and-black ware was excavated by Cunningham at Bhojpur (Tope D. No. 4) and is at present in the British Museum. At Mahesvar on the Narbada the recent excavations showed red-and-black ware in association with microliths well below the 1st. century A.D. levels.⁵

Similarly in Gujerat recent excavations have revealed red-and-black ware associated with microliths in layers sealed by ones ascribable to the Ksatrapas and datable presumably to pre-1st century A.D.⁶

These reports are not at all easy to interpret, but it appears that the red-and-black ware is not always the companion of iron working, and certainly in the Gujerat

area occurs without it. Also there seems to be reason to assign a date prior to the Christian era to its occurrence at Sisupalgarh and Rajgir, and also possibly at Arikamedu. There is not sufficient evidence to determine whether it accompanied iron at these sites, but it certainly did so at Sisupalgarh.⁷

The upper limits of this ware may now be briefly sketched. It appears that there are in Raichur three main divisions of the B wares. In the first, B1 and 3 wares appear side by side, the former predominating: in the 2nd B1, 2 and 3 wares all appear, the latter two predominating. In the final stage B3 wares in a restricted range of forms appear alongside a variety of plain wares anticipating the 'D'. There is no essential technological break in the B1, 2 and 3 wares. They have been taken as indicating roughly three periods, the Post-Neolithic, Pre-Medieval A and B. It is certain that the B1 ware continues throughout the Pre-Medieval A, and probable that it persists into the B period.

- b) Iron working. The earliest iron using culture providing material for study in India is that described by Gordon⁸ as extending from Hazar Mardi through the Persian Makran to Kulli, and thence northwards to Moghul Ghundai. Indeed, Gordon has said of this culture: "It seems likely then that some time between 700 and 500 B.C. this iron using people who buried their dead in cairns was spreading, eastward through

Makran into Baluchistan." It is possible that these people brought with them the forerunner of the northern iron industry, although the shadowy contacts of the N.W. of India with the proto-Achaemenids provide another possible source.

Analysis of the finds of iron in N. India shows two probably divisions of the industry. The later, which is well-defined is characterised by the many western objects from the main excavations of Sirkap. The earlier is at present based on most scanty and unsatisfactory material, but if the Bhir mound (Marshall's II) iron objects can be taken as guides, it must have included the straight-bladed double-edged sword with tang,⁹ tanged arrow-heads with triangular section or leaf-shaped blade,¹⁰ the socketed axe and adze,¹¹ tongs,¹² beak irons,¹³ and the socketed hoe.¹⁴ It is not unexpected that the main types of this earlier group reappear in the later industry at Taxila, but it may be legitimately objected that this typology is based upon the north-west only. Of the Gangetic valley the evidence at present available defies adequate analysis. There are, moreover, certain perplexing features of the early northern typology of Taxila, and these require further investigation. Blacksmith's tongs are not known outside India in pre-Roman context,¹⁵ whilst the anvil and particularly the beak-iron is also of Graeco-Roman connection.¹⁶ It is, however, abundantly clear that the northern industry, as exemplified at Taxila, and latterly

at other N. Indian sites, is quite distinct morphologically from the southern industry (above p.⁴³⁹), although evidence for its origins is still scanty.

The evidence of Sanskrit literature has been frequently used to support arguments for the early use of iron in Aryan India.¹⁷ Whilst this type of argument can provide useful pointers for the excavator, it tells us very little of the peoples we wish to study. It does, however, seem legitimate, in the absence of more explicit material evidence, to postulate that iron was an essential technological basis of the Ganges valley civilisation of Mauryan times.¹⁸

We are now in a position to consider the origins of the S. Indian iron industry. Bearing in mind the striking differences of the northern and southern tool types, and the probable affinities of the former to the cairn builders of Baluchistan, three possible sources for the southern industry remain. 1) That the industry was a spontaneous development in the peninsula and derived its tool types from stone or bronze and copper prototypes already in currency. 2) That the idea of iron smelting was imported, without any typical forms, from some external source. 3) That the industry, including some forms of tool was an importation. In the third case, it should be possible to indicate the source of contact.

1). There is little likelihood of the spontaneous development of iron smelting in S. India unless it occurred

at a time when there were no direct external stimuli. Whilst there is every possibility of an independent discovery of the technique it seems very improbable unless it was supported by a society which could properly exploit it. There is at present no evidence of this. It has been noticed above (p.440) that a certain relationship appears to exist between types of neolith and the iron flat axes. This may well be illusory, as it could equally well be shown with the flat copper and bronze axes of the Indus valley. There remains, however, many distinctive types that occur throughout the S. Indian industry and which cannot be traced to either the neolithic or Indus valley types.

2) It is indeed possible that the technique of iron extraction should have been passed by some temporary visitors to a people who were already conversant with copper and bronze working: that they should leave no trace of their own tools is highly improbable, and the existence of an active bronze or copper based society seems an essential prerequisite. At this point it must be admitted that the lack of any society of ~~this~~ kind renders the theory untenable.

3) If there is no trace of a likely antecedant for the southern industry in the north, it is necessary to look elsewhere. It is a distinct possibility that the southern industry could have arisen as a result of the

importation to a barbarous society of iron objects as a form of exchange for goods to be exported. The precedent for such a trade exists in the account of Axumite merchants visiting the interior of Africa (quoted by Cosmas Indicopleustes). An important element in the situation was that the merchants acted as middlemen, and even though they may themselves have received the currency of some civilized society they clearly found barter a more acceptable mode of business in dealing with their barbarous suppliers. The second stage in the process would be that the barbarians themselves mastered the art of extracting and forming the ore, and that barter would give way to currency exchange. At this point the barbarians would emerge into civilization. The Axumites took salt and iron to the interior of Africa and returned with gold. In trading with a littoral people sale would lose its commodity value: the value of iron would remain. If sea traders did in fact bring iron to India (and Axum was famous for its iron), they may have brought it either in certain stock forms - knives, arrow-heads etc., or in bar form, although the former is more probable.

This theory permits considerable variety of tool types. Some few might bear the direct traces of the original imports, others might be the native adaptations of their former non-metallic tools.

The dating of the S. Indian iron industry must, it appears remain obscure until the coastal entrepôts which

connected the peninsula with the Hellenistic world, Ptolemaic Egypt and Rome are better known. It is clear that subsequent to the world conquests of Alexander the Hellenistic world, and its new centre in Alexandria, turned their eyes towards the fabulous east. Thus Ptolemy Philadelphus built two ports, Berenice and Myos Hormos on the Red Sea coast (c.275 B.C.) and in the succeeding centuries trade must have developed.¹⁹.

At any rate it is most likely that the S. Indian industry developed as a result of foreign trade contacts. The date at which a full fledged iron industry appeared in South India falls probably after 275 B.C. and in all probability in the last century B.C. If our analysis of the causes giving rise to the industry are correct, it would appear that it originated somewhere in the coastal plain of Tamil nād, for although there is now general agreement as to the extension of coastal trade to Malabar and only later to Tamilnād, the former area does not offer a favourable environment for iron working. The only alternative account of this theory would involve the external stimulus coming by coastal trade from N. India. This possibility deserves consideration but is open to serious objections. The distinct character of northern and southern tool types is not accounted for, and at present there is no evidence from the Bombay or Ganges Delta coastal regions. There is, moreover, no evidence of this sea trade (at any rate in any quantity) in pre-Mauryan

times, nor indeed until the Periplus, whilst the external trading contacts seem to be better attested. The sea-borne nature of the contact is, in any case, indicated as the evidence suggests that iron reached the ~~Mannada~~ Mannada region (and the main land route from the north) only from the Tamil plain in conjunction with the Bl red-and-black ware.

c) The S. Indian Grave Complex. We will consider now the archaeological evidence of dating the graves, considered against the background of literary references:-

- 1). The Sangam literature refers to urn burial (1st. - 3rd cent. A.D.)
- 2). Manimekhalai refers to various types of grave (4th - 6th cent. A.D.)
- 3). Numismatic material. A grave or graves in Coimbatore produced a silver coin of Augustus and a number of punch marked coins.²⁰ A grave at Sultur produced a bronze coin identified by Allan as of Eran type.²¹ A further copper punch marked coin was found at Savandrug in a grave.²²

Of the Eran type coin, Wheeler writes: "This is the best evidence for the dating of a Megalithic tomb in India, other than at Brahmagiri".²³ It is unfortunate that the evidence is not as firm as subsequent writers have considered it. Isolated coins may occur quite out of context. This is clearly indicated by Roman coin finds at Chandravalli alongside coins of more than a century later,²⁴ and Wheeler cites another S. Indian example of this type. More dis-

turbing is the recent discovery of 9 coins ascribable to Eran or Ujjain in the "upper layers of Period IIA" at Sisupalgarh.²⁵ The excavator dates the layer of occurrence 50-100 A.D., and there seems little reason to contest his conclusion. It is also legitimate to seek the means of transportation of the Sullur coin. Eran lies near the main route from Kausāmbī and the Ganges valley to the W. coast ports. It also connects indirectly with the southerly route via Paithan and Ter to the Andhra coast and the ~~Kanada~~ country. Whilst it is perfectly possible that the coin would have followed this route at any time after the Mauryan intrusion into the south, all the evidence available suggests that the route did not open up for any regular use until the later, Sātavāhana, intrusion. In this case, the coin may only have reached Sulur in the 2nd century A.D. There is another reason for ascribing a late dating to the graves at Sulur. At Savandrug and Sulur A.2 type graves occur beside A.1. Both types are typified in Raichur at Benkal and Bilebhavi (above p.126f). The comparative lateness of these sites may be confirmed by finds of painted B2 ware in the Benkal cemetery (above p.67).

4). Other dating evidence for the graves. Wheeler noticed the occurrence of B2 type ware in Cochin and Coimbatore, and found that it possibly indicated close chronological relationship to the B2 wares at Chandravalli. Technologically the wares are identical (above p.300).

At Amarāvati¹ priform urns occur beneath the foundation of a brick stupa, probably of the 3rd. - 4th. century A.D. (above p.459).

There are several indications of date for objects excavated in the great urn-cemetery at Adichanallur. The ring handled milk-skimmer (?)²⁶ is known in the north at Ahiccatra,²⁷ Taxila, Sirkap - in silver,²⁸ and at Begram. It occurs in immediately pre-Kushan and Kushan context. Likewise the stone legged saddle-quern²⁹ has a wide distribution in India.³⁰ The most firm dating appears to be given by specimens from Sirkap.³¹ The pre-Kushan type is without the projecting table at one end. Several south Indian examples occur. The simple type without projections is at Perumbair,³² at Peringalem, Malabar,³³ and Amarāvati.³⁴ The projecting type is known so far only at Adichanallur. Sankalia has shown that in the Deccan the later type is associated with Sātavāhana levels; it occurs at both Kohlapur and Kondapur, and it is tempting to trace its southern extensions to the Sātavāhana contacts with the East Coast. The evidence of these objects, taken generally, is quite convincing, but their wide-spread occurrence in early times needs to be accounted for.

We may conclude that there is very little dating evidence which favours a B.C. date for any of the graves. There is, moreover, quite persistent indication of a 1st.-3rd. century A.D. dating throughout the peninsula. There

is also evidence which favours a much later survival of the burials than has hitherto been recognized. The possibility of the earlier existence of the burials at known coastal sites, is open, but as yet not demonstrated.

We may now revert to the origins of the post-neolithic culture and the date of its entering Raichur district. We have noticed above that the stone cist grave is the most wide-spread type (p.462) whilst there are other local varieties. The Piriform urn seems to be almost limited to the coastal plain areas and to the area noticed as that of the ancient Chola, Pāndya and Chera kingdoms.³⁵ Other types are local. The pottery sarcophagus occurs in the W. coastal strip and also the east, north of the Cola Nāḍ; it then appears to have followed the valley of the Penner river and there are several examples from the Raichur-Bellary-Anantapur region. Immediately to the north of this region is a small area in which the stone alignment occurs. The frequent occurrence of iron and red-and-black wares of similar (Bl/) forms in graves of all types, widely separated in space, suggests that the whole process sprung into existence in a limited time. It seems essential to assume that stone or pottery cists were a foreign importation, and that they came with the iron. It is possible that the culture arose in the coastal regions, in the first place, as the result of foreign traders settling in small numbers and reacting upon the existing population. That the resulting culture only then brought about an expansion of

population and a pushing out into the interior seems feasible. The expansion would have included iron-workers, and other specialist castes. It is at any rate possible that the date of the movement would be during the period of sudden prosperity and stimulated by the Roman trade. Perhaps the impetus of the movement, once started, would continue even when the trade stimulus had ceased to exist. In the light of our reconstruction of the historical evidence it seems reasonable to assign a date at the turn of the Christian era to the coming of the post-neolithic culture to Raichur. This date is, however, only tentative and must await further evidence both from Raichur area and from the Tamil plain. It further assumes the contemporary existence of the cultures of Raichur and Brahmagiri. This we shall consider below.

As to the dates of the culture in the Tamil plain the evidence of Arikamedu suggests that it gave way to a pre-medieval type of culture somewhere before the introduction of Arretine ware (c.25 A.D.) and that it extended back for a period of time as yet indicated only by the depth of occupation (70 c.m. at least)³⁶. The disparity of these dates to those of Raichur will be considered in the context of the comparative chronology.

The dating just arrived at may be considered as an upper limit for the process. Various considerations favour a slightly earlier one. Wheeler's estimate of the duration

of the Megalithic culture of Brahmagiri at 2 centuries,³⁷ is based upon his own wide experience of ancient sites. If the revised date (125 A.D.) for the beginning of the Andhra period (below) is accepted, a lower date of 75 B.C. for the culture's arrival in Raichur would be reached, assuming the parallel dates of Raichur and Brahmagiri (to be argued below). One consideration, however, tends to bring forward this date. Wheeler was at least in part influenced by the wide extent of the adjacent cemetery which he considered belonged exclusively to the Megalithic period³⁸. (whilst admitting an overlap with the succeeding culture). It has been argued in this work that there is evidence to support a very much more prolonged survival of the cist burial, and if this be accepted then Wheeler's dating could fall very near that advanced above.

Bearing this consideration in mind, we may set an outside limit of 50 B.C. - 25 A.D. for the probable date of origin of the post-neolithic culture of Raichur.

3. DATING OF THE PRE-MEDIEVAL CULTURE (A & B) AND THE MEDIEVAL.

The pre-medieval culture in Raichur is defined as starting at the first occurrence of Sātavāhana contact. The earliest firm historical evidence for the southern expansion of Sātavāhana rule is contained in the Nasik

inscription of Gautamīputra Śātakarni (106-30 A.D.) which speaks of his control of Rishika, Asmaka, Mūlaka and Vidarbha, and claims the suzerainty of Sahya, Malaya and Mahendra. This inscription dates from the 18th year of his reign³⁹ and claims that his horses drank the waters of three seas. It seems probable that this conquest coincided with a shift of emphasis to the Andhra coast.⁴⁰

These conclusions are indeed supported by the finds of Śātavāhana coins in that region (see above p.340) and at Chandravalli and Kondapur.⁴¹ The coin finds of Chandravalli may indicate that it was indeed not until the subsequent reign that Śātavāhana influence was felt there, but this is not certain. The Kondapur finds are perhaps more significant as indicating the road to the E. Coast, but here it appears to be the coinage of Gautamīputra and his successors down to Yajnasrī which is represented. The finds of earlier Roman coins at these sites are evaluated by Wheeler,⁴² as forming a "high value currency alongside the potin coinage at a time when this Roman bullion trade had ceased or at a place where it had not penetrated". This may be so, but it has already been argued (above p.551) that finds of odd, particularly fine, coins, can not be used as firm dating points in this context. Thus, whilst it is admitted that the Roman coinage of India can be used to argue general dates of importation, it does not follow that the individual find spots can be dated with any degree of certainty

In the light of this fact Wheeler's dating of the Andhra culture of Brahmagiri⁴³ as "flourishing in the latter half of the first century A.D." requires modification, and we may rather date the commencement of the pre-medieval A of Raichur at c. 125 A.D.

It appears that with the close of the reign of Yajña Śrī the interprovincial rule of the dynasty collapsed (c.203 A.D.) to be followed by the Ikṣvākus or Śrīpārvatīyas in the Andhra coast region and by the Chutukūla in Kuntala - the province which in all probability included Raichur district. Coins assignable to the Chutus were found at Chandravalli with local pottery which conforms more nearly with the 'A' period forms than those of the 'B'. It appears possible therefore that the pre-medieval A period continues at least into the latter half of the third century A.D.

There is unfortunately no definite information from archaeological evidence for the beginning of the B period. It is probable that after the final collapse of the various branches of the Śātavāhana dynasty, and the new rule of the Vakātakas in the north (c.300 A.D.) and the Kadambas of Banavāsi (1st. quarter of the 4th century A.D.)⁴⁴ the long period of comparatively uneventful occupation of the pre-medieval B sites of Raichur commenced.

There is even less certainty as to the duration of the B period. The upper limit is set at the opening of the 14th century and the establishment of Muslim rule in the

the Deccan. This date finds support in the undoubted occurrence of 'D' wares on sites of the Vijayanagara dynasty and of the similarity of number of D ware forms from Raichur to those from the Bahmani layers of Kolhapur.⁴⁵ It is, however, quite possible that further exploration may bring this date down to one corresponding with Kākatiya or Yādava influence in the district, or even Rāstrakūta. It is, however, regarded as highly unlikely.

4. COMPARATIVE CHRONOLOGY.

A. Sites of the Kannada Region. Comparison of the culture sequence of Raichur with that of Sanganakallu, Brahmagiri and Chandravalli suggests that it is, in all essential features, one. It appears to follow that the dating of the cultures must be along similar lines; indeed the main dating point, the Andhra intrusion, has already been discussed in this context. There appears to be close comparison of the Neolithic A and B periods with the Sanganakallu II.1 and II.2 and the Brahmagiri IA and B, although it must be noted that the criteria for the division of these cultures in each case ~~are~~ different and appear contradictory. The Sanganakallu I culture is represented by a number of artifacts distinguished by their patination, but apparently essentially part of the Neolithic A. It is not possible to say more of this culture unless it can be further revealed and studied.

The parallel nature of the cultures is well illustrated by the wares and the percentage of pottery forms occurring in published accounts and we may note them at this stage (above p. 315f).

<u>Raichur</u>	<u>Brahmagiri</u>	<u>Chandravalli</u>
Neolithic A ware	60% (1A & B)	-
Post-Neolithic Bl ware	60% (Megalithic)	(not estimated)
Pre-Medieval B wares	47% (Andhra)	68% (Andhra)

We may thus conclude that the culture sequence and chronology of the northern Kannada region is very closely knit. Evidence for the southern (Mysore) part of the region suggests that it may be comparable but without more field work this cannot be proven. (See Table I at the end of this chapter).

B. Comparative Chronology of the Kannada Region
(as exemplified by Raichur) with adjacent Regions.

a). The Tamil Plain (as exemplified by Arikamedu).

It is now possible to attempt a critical comparison of the culture sequence of the Kannada region and Tamil plain (so far as is known). The sequence at Arikamedu appears to rest on Wheeler's pottery classification. We may distinguish the following periods:

- AK I. (Casal's Megalithic (Pre-Roman)
(Wheeler's Pre-Arretine

AK II (Wheeler's Arretine N. Sector

AK III (Wheeler's Post-Arretine N. Sector
(Southern Sector

The characteristics of AK I. are red-and-black (B1) ware with an admixture of grey slipped ware with crackle surface, and of black and grey ware (? Raichur A wares). Rouletted ware occurs. (there is apparently some unaccountable difference in the pottery from Casal's pre-Roman layers and those of Wheeler. We have therefore combined the main wares of each).

AK II. The pottery is still predimnantly grey, with an increase of red ware throughout the period. A small number of pots are mottled greenish grey and pink.

AK III. Red wares predominate particularly in the later S. Sector. Burnish is less common.

Comparing the morphology of Raichur with that of Period I (Casal's report) and Periods II and III (Wheeler's report), the following percentages were obtained (above p 315)

<u>Raichur</u>	<u>Arikamedu (C) I</u> <u>Red-Black ware</u>	<u>Arikamedu (N) II & III</u>
Neolithic (A ware)	50%	- (very few)
Post-Neolithic (B1) 50%	57%	- (few)
Pre-Medieval	- (very few)	73%

These figures do in fact reflect very clearly the relationships that exist. The percentages are surprisingly

high and suggest affinities almost as numerous as those within the Kannada region. The forms from Pre-Roman Arikamedu do in some respects closely resemble the Raichur Neolithic forms, although their closest affinities are with the Raichur BI. forms. Adopting Wheeler's dating (i.e., I ends c20-0 B.C.), II ends 50 - 75 A.D., and III 75 A.D.-c.200 A.D.) there can be seen to be a perplexing time lag between these periods and those of Raichur. Thus I, which appears to include grey (?A) ware sherds, and a range of red-and-black (B1)vessels, exhibits forms which lie midway between Neolithic (A) and post-neolithic (B1) forms of Raichur. The black and grey ware sherds also suggest the Neolithic B of Raichur. Similarly II includes several conflicting features. The mottled ware reflects exactly the (probably contemporary) A5 of Raichur, which appears to bridge the period Neolithic B - Post-Neolithic, on the other hand the forms of Arikamedu II are most closely allied to those of Raichur pre-medieval ware, which they appear to antedate by some 50 years. Finally Arikamedu III has its closest affinities both with regard to ware and form with the Raichur Pre-Medieval wares and here at last a synchronism of sorts may be effected. There remains, however, to explain why the Andhra intrusion should synchronise with the appearance in Raichur of forms which bear a 73% resemblance to those of Arikamedu.

The solution of these problems must await further evi-

dence which can only be provided by excavation of a regular settlement in Tamil Nad and of complementary exploration and surface collection of the type incorporated in this work. In particular the further clarification of the relationship of the Kannada Neolithic to that of the Tamil plain and of the place of the 'roulette' ware and its relationship to the N.B.P. is needed. We may, however, conclude that, from a study of the pottery, Arikamedu I is a post-neolithic culture having connections with the Kannada Neolithic. Arikamedu II is a pre-medieval culture not paralleled in the Kannada region, and therefore denotable as Pre-Medieval A1, having synchronistic connections with the Kannada late neolithic B to post-neolithic period, whilst Arikamedu III is a pre-medieval culture synchronising with the Kannada pre-medieval A and denotable as such.

We may now attempt to summarise the evidence at Arikamedu (and elsewhere in the Tamil plain) for a northern intrusion. The footed bowl (form 18 of Wheeler's) and the flat tray bowl, often rouletted, may be taken as intrusions. The first has obvious affinities with specimens from Taxila (Sirkap),⁴⁶ whilst the latter both in form and ware has overwhelming resemblance to the "NBP" forms of the Ganges valley, and provides startling confirmation of the persistence of this ware into the first century A.D. indicated by the Sisupalgarh excavations.⁴⁷ The tray bowl is beyond doubt a north Indian form and its presence at Arikamedu indicates N. Indian contact from the beginning of II. The rouletting

may indicate that the N. Indian contact was already fused with a Hellenistic contact in the course of transit from the Ganges valley. The tanged bronze mirrors of Adichanallur, with their 1st. century cousins at Sirkap,⁴⁹ occurring also at Bairat⁵⁰ and Patna, provide yet another example of the common objects to north and south, which may either have resulted from a common source of both groups in the west or be taken as evidence of an intrusion.⁵¹ The conical, cut off, cup has an all-Indian distribution: its prototypes at Taxila occur in Bhir mound II,⁵² but the Arikamedu examples⁵³ relate more nearly with those of Sirkap.⁵⁴ At Ahicchatra the Taxila sequence is amply supported, and we may conclude that the presence of this type at Adichanallur, Perumbair and Arikamedu indicates again northern contact probably of the 1st. century A.D. Another very striking pottery form is the flat bowl with loop handles: its prototype occurs at Taxila in Bhir Mound II but the later specimen from Sirkap⁵⁵ may be compared to examples from Ahicchatra, Stratum V - VI,⁵⁶ and from Bangarh V.⁵⁷ The Arikamedu specimens⁵⁸ occur in Period II. We have already noticed (in connection with the dating of the graves) the occurrence of legged querns, some with projecting platform, as a northern intrusion, and also of the internal looped handle of a concave "skimmer" form. The terracotta ringwell occurs in II and its prototypes must be sought in the sites of the Ganges valley, yet another suggestion of the dating of the northern intrusion, for apart from the few published reports of its occurrence,

it has been noticed in exploration at many Ganges sites. Beside this, we may note the clay finial⁵⁹ which must be compared with the "Kushan" specimens of Bhita⁶⁰ rather than the "Mauryan".

Thus it appears that the Tamil plain culture sequence shows evidence of a northern intrusion commencing in Period II (1st. century A.D.). This date fits well the comparable objects in their northern setting: several of them have a developed sequence in the north and thus indicate the stage at which the form spread to the south. On the other hand the intrusion must be regarded as first reaching the Tamil plain, at a time when this centre was still influencing Raichur. The implication is that the intrusive elements by-passed Raichur which straddled the main land-route to the south. That is, that the contact between the Ganges valley and the south was either by the sea routes or perhaps by the main Paithan - Andhra coast route and thence south. (See Table 2 at the end of this chapter.)

b). The Andhra Coast. There is, as yet, no excavated culture sequence from this area, nor has any surface collection of pottery been published. The result is that the region provides one of the most tantalising gaps in our knowledge. The following indications may be noticed. Large numbers of neolithic artifacts occurred in the Amaravati locality. These may indicate a neolithic culture

comparable to the Kannada neolithic. Cist and circle graves occur whilst red-and-black ware sherds and piriform urns have also been reported. These may indicate a post-neolithic period. The surface pottery observed by the writer at Amarāvati and Nāgārjunikondā, together with a few published examples⁶¹, show beyond doubt a pre-medieval A period. My impression was that proper study of this pottery would show extremely close affinities with Raichur. A study of this type could elucidate the quarter from which the pre-medieval culture reached the Kannada region and throw important light on this aspect of Andhra history. It could also provide most interesting evidence for the relationship of the Andhra coast and Tamil plain.

There are, of course, several important omissions in the above summary. The problems of the Sātavāhana (or even earlier) intrusion from the north-west, and of an early Aryan intrusion (perhaps by sea or along the coast) remain to be faced. These can best be tackled by a study of the material culture sequence of the region, particularly of the Kistna Delta, and, as we have several times stressed, of sensible small scale excavations at such sites as Jaggayapeta and Amarāvati.

c). Mahā-rāstra. To the north of the North Kannada region lies the Deccan Trap. This region (as has been noticed in Chapter I) is watered in the main by well irrigation. It is not therefore surprising that the prehistoric

cultures are found mainly on the larger and more regular streams that flow through the region. It is probable that the black cotton soil would have nourished a heavy forest under plus rainfall conditions, and even when this was cleared the problem of well digging remained. The culture sequence is revealed by the excavations at Nasik and Jorwe.⁶² It is further supported by the excavations at Kondapur (above p.103 f) and at Bahal.

1. At Nasik, Jorwe and Bahal appears a prehistoric culture based on Copper and a microlithic blade and lunate industry. No polished stone axes are reported, and this is probably explained by the absence of suitable raw material. The polished stone axe is substituted by flat copper axes. The pottery includes buff and grey wares which both in ware and form suggest (at first sight) affinities with the Raichur A wares. Some specimens bear post firing ochre painting in cross-hatched and linear designs. We shall name this the Jorwe Culture.

2. At all sites this culture seems to have given way to a Sātavāhana culture. There is no clear evidence for a pre-Sātavāhana intrusion at any site, except perhaps Nasik where Cl ware (NBP) is claimed.⁶³ There is also no archaeological evidence for the dating of the Sātavāhana sites, and we shall therefore follow Gairola's interpretation of the Dynastic history and place the commencement of this culture c.50 B.C. The early Sātavāhana culture in this area thus becomes of considerable interest.

3. At Kolhapur, a post-Sātavāhana period is recognized in the pottery. This period apparently includes the ^aSilhāra dynasty, and is succeeded by (4)a Bāhmani period, again with distinct pottery and dating from the beginning of the 14th century.

1. It appears that the Jorwe culture may be roughly equated in technology and pottery wares with the Kannada neolithic; and perhaps the use of copper may ultimately be found to subdivide a Jorwe A and B. There is as yet no clear trace of a post-neolithic period in the region, although red-and-black ware has been reported from Mahesvar; further evidence is needed on this point and also upon early northern intrusions at Paithan etc.

2. The Sātavāhana culture is seen, in all probability to antedate the equivalent pre-medieval A of Raichur. The distinguishing features of this interval have yet to be clarified, as has the relationship of the region with the Andhra coast. There appears to exist a definite affinity of the pottery forms of the Raichur pre-medieval A, but until the pottery from further sites is published no definite statistic can be given.

3. The pottery of the post-Sātavāhana period is linked closely both with regard to ware and form to that of Raichur pre-medieval B, and historically the two periods must be roughly parallel, likewise the affinities of the

Raichur medieval pottery at present appear to lie in the Bahmani period, and a number of common forms are noted.

(It is probable that the Medieval pottery of the Andhra region would show similar affinities, but none is available for comparison).

We have now discussed the material available for the comparative culture sequence of the Kannada region, and compared the resulting chronology with the culture sequence found in adjacent regions. The results are shown graphically in the tables at the end of this chapter. This group of regions appears to share much of a common evolution. The microlithic industries that are reported, without pottery, in all the regions concerned, appear to indicate tribes of hunters and collectors in the upper stage of savagery. At a date as yet unknown the lower barbarian pastoralists of the Kannada region appear, and show definite affinities to the chalcolithic settlements of Mahārāstra, and the hypothetical neolithic agriculturalists of the Tamil plain and Andhra coast (who have not yet been isolated as cultures from the archaeological view point). On the Tamil plain and subsequently in the Kannada region the smelting of iron marks the transition to the upper status of barbarism, and finally to civilization (which was achieved slightly earlier in Mahārāstra where evidence of the former stage is not yet available). Throughout the group of regions this final transformation appears to have coincided

very nearly with external trade stimulus from Rome, and it appears to be this stimulus that marks the period of prosperity of the pre-medieval A. The second cultural stage of civilization is that which we have named pre-medieval B, whilst the third great stage is the Medieval which corresponds in time with the period of Islamic imperialism, succeeded by the invasions of European colonial powers, culminating in the British raj.

Beyond the Narbada river, the central hill and forest areas and the Chilka lake, lies northern India which likewise falls into a number of distinctive regions. Key point on the frontier have been found in Orissa at Sisupalgarh, at Tewar near Jabulpore and at Mahesvar. Excavations at these sites have recently been made and the full reports of the results is eagerly awaited. They will certainly provide valuable links between north and south. The northern regions of Hindustan nourishing as they did two distinct periods of civilization before 50 B.C. (those of the Indus valley c.3000-1800 B.C., and the Ganges valley at present not attested before 250 B.C. but conjecturally from 500 B.C.) provide ample material for a comparable study of the regions involved, and the present work must remain incomplete until this is made. To do so is outside our scope but a sketch indicative of the main lines such a study must follow will not perhaps be out of place.

C. The Culture Sequence of N. India.

The Indo-Iranian chalcolithic 'peasant communities' that preceded and accompanied the Indus Valley civilization are still not satisfactorily connected with the later cultures either of the Indus or Gangetic regions. They are important to the present argument in so far as they provide the necessary cultural background for the neolithic and chalcolithic cultures which are found in central and southern India, but until a closer contact can be shown they form a distinct section of the archaeology of India, and we shall not therefore consider them.

Turning to the so-called historical cultures of India we must note with regret that the excavations of the Archaeological Department have so far failed to provide a culture sequence of the sort that we have attempted for Raichur. Too often strata have been dated by coins or the uncertain evidence of epigraphy and too often have dynastic terms, Mauryan, Sunga etc., been applied to archaeologically arbitrary layers. The result of this is that the material evidence available in the form of pottery, tools, etc., has been very largely neglected, with the result that on the one hand monuments of national importance such as Sanchi or Sarnath must be now considered almost apart from the material cultures which produced them and evidence which has been largely destroyed, whilst on the other, archaeology has failed completely to convey the dramatic picture of the rise of Indian civilization and its extension

throughout India and fails almost as completely to provide the clear material background to such momentous historical events as the coming of the Muslims. Another consequence of this failure has been the inability to use the dating evidence available from the more advanced regions in the relatively unprogressive areas of India, so that every find of a stone implement has been heralded as a sign of remote antiquity: in this way the dramatic co-existence of societies in different stages of social evolution, and the constant potentialities of culture contacts, have been obscured and the comparatively recent adoption of (for example) metals by jungle tribes has been hidden by a cult of the most ancient. In this situation the way forward appears to be the study and elimination of the known, and the reaching out in time from the consolidated known to the unknown. If this is to be achieved it calls for copious surface collection backed up by small scale and intelligent pilot excavation: the example of Subba Rao's work in Baroda is excellent. It also calls for the complete excavation of a small number of key sites. The present work at Kausāmbī is an example worthy of mention. Many of our problem will eventually be solved when the University of Allahabad publishes the results of its excellent work.

We shall now attempt an evaluation of certain parts of a proposed culture sequence:-

1. A number of copper hoards have been reported in the region of the Ganges-Jamuna Doab and in the region south of the Lower Ganges. In no case has a settlement site been reported in conjunction with the hoards, and it is therefore not easy to date them. Recently at two find spots of the former group, fragments of pottery, described as "ochre-washed ware", were found, and similar sherds occurred in small quantities below the lowest extensive occupation at Hastināpur. On the strength of this tenuous evidence Lal concludes⁶⁴. "Thus, if the copper hoards are to be associated with the ill-fired ochre-washed ware, it would follow that they are the products of a people who inhabited the Gangetic Basin, presumably before the arrival of the Aryans". This is, of course, far too sweeping a conclusion but we may restate it thus: that the evidence available suggests that the copper hoards of the Ganges-Jamuna Doab are probably associated with the fragments of "ochre-washed ware", and apparently precede the Painted Grey ware at one site, although not apparently in a prolonged occupation.

2.a. The excavations of Hastinapur and considerable explorations in the Ganges-Jamuna Doab and westwards to the frontiers of India, have brought to light a "grey painted ware" that was first reported in the lowest stratum of Ahicchatra. At one site (Rupar) the ware is found in association with Indus Valley type ware. It is interesting that it occurs predominantly in two forms; a shallow tray bowl and deeper bowl, sometimes with flattened base, both

of which occur in the later NBP ware. The whole technique of manufacture is closely linked with that of the NBP. Unfortunately little other evidence is at present available for the technology and culture of the makers of this ware, but Lal⁶⁵ has drawn attention to the fact that this ware is the earliest yet known which occurs at nearly all the sites associated by tradition with the Mahābhārata story. It seems certain that a terminus for the ware is supplied by the overlying occurrence of the NBP at Hastināpur, Ahicchatra⁶⁶ etc., whilst its distribution extends no further east than Ahicchatra.

Before considering the cultures that may be associated with the NBP ware we shall notice what other sites of the Gangetic Valley regions can supply evidence of earlier cultures.

b) At Rajgir, Ghosh reports that Period I contained sherds of coarse red ware with a dull wash of terracotta colour, sometimes black slip, and in one case chocolate slip. The first NBP occurred in Period IIA alongside the earliest red-and-black (?Bl) ware. The writer's own observation suggested that either Period I or IIA contained sherds of a distinct and fine grey ware, several specimens of which were obtained, from the face of the excavated area.⁶⁷

At Sisupalgarh Period I is comparable to Rajgir I. It contained dull grey or red ware, well fired, with stray examples of "black shiny ware", and typical knobbed bowls

(Form 1). This period preceded the red-and-black (B1) ware which occurs only in IIA and the NBP which occurs only in IIB. Form **11** of Period I appears to be the rim of a pear-shaped vessel.⁶⁸.

At Kumrahar near Patna, excavations of a burnt brick Chaitya hall revealed that the lower period contained no NBP sherds, whilst it contained many sherds of a grey ware closely resembling the specimens found by the present writer at Rajgir. At Vaisali Codrington made a similar observation.

3. The period of the NBP. At nearly all the sites mentioned above the wares listed occur in layers below the earliest NBP. Certain forms, however, persist from 2a) and b) into this period, and this fact is nowhere more clearly shown than in the forms of NBP and Painted Grey ware at Ahicchatra. The period marks the material flowering of the Gangetic valley civilization and we have associated it with the NBP solely because of the prominence which this ware has gained. There are some distinct regions, but there also appear to be certain objects that have a wider, inter-regional distribution.

a) In the region of Mathura, and perhaps as far east as Ahicchatra the greywares continue and the NBP is less common than further east.

b) In the region of Taxila and the Punjab the NBP is extremely rare.

c) In the Rajputana-Mālva region the NBP is extremely rare.

d) In the Mid-Ganges valley the NBP is very common. The locus classicus appears to be Bhita, at which the ware was described by Marshall,⁶⁹ although the description lacked precision. Later Codrington⁷⁰ drew attention to its distinctness. Of all the many sites examined, Bhita, Jhusi and Rajghat appear to have been the centres of the finest wares.

e) Further east in the Lower Ganges and Orissa the ware is again not common.

Among the more widespread objects associated with the culture may be noticed a multiplicity of types of terracottas. The study of these has too often been divorced from stratigraphy, but it is to be hoped that the excavations at Kausāmbī will provide a key to their sequence and dating, and if this is so the class may become one of the most important dating objects in India. The pottery of the period provides a number of distinct forms: among these we may note the pear-shaped vessel, a type which evolves at Ahicchatra, occurring in Stratum VIII and again in IV. It may be compared with specimens from the Bhir Mound (where it is very common), Sisupalgarh (where it occurs in an early level), Rajgir, Rairh and many other Gangetic sites. Another distinctive form which occurs in Ahicchatra VII and at the Bhir Mound is a carinated vessel with inturned plain rim.⁷¹ Likewise, the carinated dish⁷²

and the early forms of the pinched or string cut conical drinking cup, a type which is almost universal in the Ganges, appear in this period⁷³. at Ahicchatra, Taxila, Sisupalgarh, and at other sites in similar context. To this period also may be assigned the early northern iron industry which requires an analysis similar to that accorded the southern iron industry above.

An analysis of these various categories of objects is already possible, using museum collections and publications. The study would show how the culture grew out of its predecessor, and how it spread into the different regions of N. India. Any one of these classes of objects, if exhaustively studied, could indeed, provide a very adequate time scale for use at a wide range of sites. Analysis of this culture (3) will probably show that it is amenable to chronological as well as geographical subdivision. Thus for example in the early period NBP appears (from surface observation) to be rare and occur alongside fine grey wares of the preceding culture. In the middle period the NBP appears at its most plentiful and finest technological level, and in the later period the NBP becomes more variegated, the firing less even, the surface often coarser etc. This supposition is based upon insufficient evidence, although it is supported by excavations reports from Bhita⁷⁴. and Ahicchatra,⁷⁵. but it does in fact suggest the lines along which research should proceed.

The period is one of expansion of the newly risen

civilization of the Gangetic plain. As Kosambi has shown this expansion must first have been painfully slow, depending upon the forest clearance and the resources of manpower, its culmination in the traditional rivalry of ancient Kosala and Magadha makes possible a new stage of life and culture and supplied the legend of an unsullied material glory that has inspired the Indian mind down to the present time.⁷⁶

4. The Period of the Buff and Red-Slipped Wares.

A distinguishing feature of the previous periods is the presence of numbers of black or grey sherds. At a certain time a change occurs which can be observed at various sites. Thus at Bhita the new period is distinguished by buff wares,⁷⁷ at Sirkap by the predominance of red slip on buff ware.⁷⁸ Similar changes can be observed at other sites (for example Ahicchatra Stratum V - IV). The change is in no way a complete break with the previous period: thus at Taxila the red slip wares are found in the Bhir mound but in smaller proportion. Many of the distinctive forms of the earlier period recur in the later, but alongside them new forms occur, some with shadowy Hellenistic prototypes. We may note the necked sprinkler and Surahi types that appear in the polished red ware in Gujerat⁷⁹ and can also be traced across India to Bangarh⁸⁰ and Sisupalgarh.⁸¹ The excavations at Sirkap provide many other examples of new forms that may be traced again in

the "Kushan" vessels from Bhita,⁸² Ahicchatra, and the Jaypur sites of Rairh,⁸³ Sambhar and Bairat.⁸⁴

The northern iron industry which is distinguished at Sirkap by various western(? Roman) types demonstrates a similar change to that of the pottery, whilst the terracottas of Bhita show clearly how rich a field these objects would yield for precisising the culture sequence.⁸⁵

This period is one in which the Gangetic civilization achieves a new level as the result of synthesis of the earlier culture with the new elements that entered from the west. It is therefore at once a period of expansion and consolidation, and seems naturally to be associated with the history of the dynasties of foreigners or Mlecchas whose coming marked for the scholiast of the purāṇa the evils of the Kali yuga.⁸⁶ It also appears clear that the northern intrusion of the Tamil plain and later of the Kannada region can be associated with this period, and the elements that we have suggested to be intrusive can, with very few possibly earlier exceptions, be thus assigned at Arikamedu in the 1st. century A.D.

5. The evidence available is insufficient to distinguish the archaeological cultures that follow 4. In some respects it is possible that the culture survived for a great time: and that the red wares of the contemporary middle Ganges are its logical descendants. On the other hand, the terracottas of Bhita and Ahicchatra provide clear indication of far reaching changes in style in the

period of Gupta dominance. Similarly the whole material culture undergoes further changes of fashion with the coming of the Muslims.

The cultures of all these periods must have brought with them regional variations as well as inter-regional similarities, and it is the pleasant and simple task of archaeologists to collect, analyse and publish them. In particular the pottery sequence lies revealed for any inquisitive collector: at Mathura, Jhusi, Bhita and a host of other sites the study of exposed faces and the collection of the objects they reveal, coupled with surface collection and intelligent observation, could eliminate a great part of the expense of excavation. The need, as we have already stressed several times, is for region^{al} explorations and pilot excavations, and the production of a series of regional studies along the lines that we have tried to suggest.

TABLE I. COMPARATIVE CULTURE SEQUENCES WITHIN
THE KANNADA REGION

<u>Absolute Date</u>	<u>Raichur Dt.</u>	<u>Brahmagiri</u>	<u>Sangana-kallu</u>	<u>Chandravalli.</u>
	?	?	(?) I	
	↑	↓		
c.250 B.C.	Neolithic A	Stone Axe Culture IA	II.1.	
	Neolithic B	Stone Axe Culture IB	II.2.	
0	-----			
125 A.D.	Post-Neolithic	Megalithic	III	Megalithic
	Pre-Medieval A	Andhra		Andhra
300	-----	↓		↓
	Pre-Medieval B	?		?
1300	-----			
	Medieval			

TABLE 2. COMPARATIVE CULTURE SEQUENCES OF THE KANNADA

REGION AND ADJACENT REGIONS

Abs. Date.	Kannada Rgn.	Tamil Plain Rgn.	Andhra Coast Rgn.	Mahārāstra Rgn.	N. India
500 B.C.	?		?	?	1
400	↓		↓	↓	
300	Neolithic A	(Neolithic)	(Neolithic)		2
200	Neolithic B	?			3
100		↑	(Post-Neolithic)	Jorwe Culture	
0		AK I		Sātavāhana	4
		AK II			
100 A.D.	Post-Neolithic.		Pre-Medieval A.		
		AK III			
200	Pre-Medieval A.				
300					
	Pre-Medieval B.		Pre-Medieval B	Late Sātavāhana	5
400					
500					
600					
700					
800					
900					
1000					
1100					
1200					
1300					
1400	Medieval		Medieval	Bahmani	
1500	↓		↓	↓	

Notes.

AKI equates with Kannada post-neolithic brackets
 AKIII with Kannada Pre-Medieval A.
 Cultures given in have yet to be demonstrated.

Numbers refer to those of text.

CHAPTER XI: NOTES AND REFERENCES

1. Wheeler, A.I.4. p.205.
2. A.I.5. pp.68-72, pp84-6.
3. A.I.7. pp.71-7.
4. ibid p.71.
5. Information kindly supplied by Dr. H.D. Sankalia.
6. Subba Rao, loc.cit. 1953 p.65, Note 17.
7. A.I.5. p.93.
8. Gordon, D.H. J.R.A.I. LXXX pp.66-7.
9. Marshall, loc.cit. 1951 p.545, No.59.
10. ibid. p.548, nos.73-6, 80-3.
11. ibid. pp.552-3, nos. 103, 112-3.
12. ibid. p.554, no.130.
13. ibid p.556, nos. 143-4.
14. ibid. p.559, nos. 182-4.
15. Petrie, loc.cit. p.41.
16. Marshall, loc.cit. 1951, pp.555-6.
17. Neogi, loc.cit. Chs. 1-2.
18. Kosambi, D.D. J.B.B.R.A.S. XXVII pt.II pp.194-5. This brilliant explanation of the importance of Rajgir which lies on the main trade route for metals to the Ganges valley states, seems to support the relative importance of copper and bronze, and perhaps the relatively subordinate status of iron in the cultures of the times.
19. Rawlinson, loc.cit. p.91 ff.
20. Quoted by Wheeler in A.I.4. p.300.
21. Man XXX No.10, p.172.
22. Branfill, loc.cit.
23. Wheeler, A.I.4. p.300.

24. ibid p.287.
25. Lal, B.B. A.I.5. p.97.
26. Rea, A. C.P.A. Pl.VIII, No.26.
27. A.I.1. pp.42-3 No.16.
28. Marshall, loc.cit. 1951 p.614, Nos.209, b.
29. Rea, loc.cit. Pl.VII Nos.11-12.
30. Sankalia, H.D. J.R.Anth.S.B.1950.
31. Marshall, loc.cit. 1951 p.486.
32. Rea, loc.cit. Pl.XI. No.18.
33. A.S.A.R.(.S.C.) 1910-11.
34. A.S.A.R.(S.C.) 1906-7.
35. Diksitar, V.R.R. Silappadikaram, Pl.I.
36. A.I.2. pp.23-4; Casal, loc.cit. pp.31-2.
37. A.I.4. p.201.
38. ibid.
39. Sircar, D.C. Select Inscriptions I, p.191. The dating of the Sātavāhanas here adopted follows that of Sircar, D.C. The Age of Imperial Unity, Ch. XIII etc.
40. Gairola, K.^U. loc.cit. 1949.
41. A.I.4. pp.287-295. and above p. .
42. ibid p.287.
43. ibid p.200.
44. Krishna Rao, B.V. History of the Early Dynasties of Andhra Desa.
45. Sankalia and Dikshit, loc.cit. pp.54-6.
46. For example, Marshall, loc.cit. 1951. Pottery:nos.105 & 6
47. A.I.5. p.79.
48. Rea, loc.cit. 1951, pp.584-5.
49. Marshall, loc.cit. 1951 pp.584-5.
50. Puri, loc.cit. pl.21.14.
51. The Adichanallur specimens were first identified by

Codrington, who commented upon their importance as intrusive types. 'Man', Oct. 1939.

52. Marshall, loc.cit. Pottery, no.102.
53. Wheeler, A.I.2. Type 12.
54. Marshall, loc.cit. Pottery, Nos. 99-101.
55. Marshall, loc.cit. Pottery, No. 113.
56. A.I.1. p.44 No.21.
57. Goswami, K.G. loc.cit. p.27.
58. A.I.2. loc.cit. type 25p, @.i.r.
59. ibid, typ4 146, 146A.
60. A.R.A.S.I. 1911-12.
61. Above p. and M.A.S.I. 71, Pl. XXI, XXII etc.
62. Sankalia and Dikshit, loc.cit; Sankalia, J.B.B.R.A.S. XXVII pt.1.
63. Sankalia, ibid. p.103. 64. A.I.7. p.38.
65. Lal, B.B. Illustrated London News, 1952. p.551.
66. It is perhaps necessary to enter a caveat that the published report on the Ahicchatra excavation pottery (A.I. 1) does not sufficiently bring out the difficulties encountered at the site. This and subsequent references to the strata at Ahicchatra can therefore only be accepted with this reservation.
67. Ghosh, A. A.I.7. p.71.
68. Lal, B.B. A.I.5. 69. A.R.A.S.I. 1911-12.
70. Man, 1929, No. 101. 71. A.I.1. fig. 1, no.12.
72. ibid. fig. 1, no.8. 73. ibid fig. 1 nos. 9 & 15.
74. A.R.A.S.I. 1911-12. 75. A.I.1.
76. Kosambi D.D. J.B.B.R.A.S.XXVII pt.11.
77. A.R.A.S.I. 1911-12 p.83.
78. A.I.4. p.48. 79. Subba Rao, loc.cit. 1951 p.50 ff.

80. Goswami, loc.cit. Pl. XXVIII.7.
81. A.I.5. p.83, No.34.
82. A.R.A.S.I. 1911-12.
83. Puri, K.N. loc.cit.
84. Sahni, D.R. Excavations at Sambhar, 1936, & Bairat, 1938
85. A.R.A.S.I. 1911-12.
86. Pargiter, F.E. Dynasties of the Kali Age, pp.65,74, etc

B I B L I O G R A P H Y

B I B L I O G R A P H Y

- Ahmad, K.M. Excavations at Kondapur. P.H.A.H.S.194
- Aiyangar, S. Manimekhalai in its Historical Setting
Krishnaswami. Madras, 1939.
- " " Some Contributions of S. India to
Indian Culture. Calcutta, 1942.
- Aiyappan, A. Rock Cut Tombs at Feroke, S. Malabar.
P.I.S.C. 1933.
- " " Pottery Braziers of Mohenjo Daro.
Man, 1939, No. 65.
- " " Megalithic Culture of S. India -
Presidential Address, I.S.C. 1945.
- " " Hand Made Pottery of the Urali Kurum-
bars of the Wynaad. Man 1947-8, No.54
- Aiyer, K.R. A Manual of the Pudukkotai State,
Venkatarama. 1944.
- Aiyer, L.A.K. See Iyer, L.A.K.
- Allan, J. Catalogue of Coins of Ancient India,
London, 1936.
- Ancient India, Nos. 1 - 7.
- Anglade, A. & The Dolmens of the Pulney Hills,
Newton, L.V. M.A.S.I. No.36.
- Annual Report, Archaeological Survey of India.
- Annual Report, Archaeological Survey (Southern Circle),
formerly Annual Report, Archaeological Department,
Madras.
- Annual Report, Hyderabad Archaeological Department.
- Ayyar, C.V. The Origin and History of Saivism in
Narayana. S. India. Madras, 1936.
- Ayyar, K.G. Sesha. Cera Kings of the Sangam Period,
London, 1937.
- Ayyar, K.V. Subrah- The Earliest Monuments of the Pandya
manya. Country and their Inscriptions.
Proceedings of 3rd Oriental Congress,
Madras, 1924.

- Barua, B.M. Inscriptions of Asoka, Calcutta, 1943.
- Basham, A.L. Prince Vijaya and the Aryanization of Ceylon; Ceylon Historical Journal, 1952
- Beazeley, G.A. Megalithic Burials in Mysore State, Antiquity 46. June, 1933.
- Beck, H.C. Notes on Sundry Asiatic Beads, Man, Oct. 1930.
- " " Beads from Taxila, M.A.S.I. 65, 1941.
- Bhandarkar, D.R. Archaeological Remains and Excavations at Nagari, M.A.S.I.4.
- " " The Hathibada Inscription, Ep. Ind. XXI
- Bhandarkar, R.G. Early History of the Dekkan, Bombay, 1884.
- Blanford, H.F. The Rainfall of India, I.M.M. III. 1886.
- Blanford, W.T. & Medlicott, H.B. Manual of the Geology of India, Vol. 1. 1887.
- Bose, P.N. Some Earthen Pots from Mahesvara, J.A.S.B. LI. Pt. 1. 1882.
- Brade-Birks, S.G. Good Soil, London, 1944.
- Branfill, R.B. Megalithic Monuments in N. Arcot, J.A.S.B. XLIX Pt. 1. 1880.
- " " On the Savandurga Rude Stone Cemetery. Ind. Ant. 1881.
- Brecks, J.W. An Account of Primitive Tribes and Monuments of the Nilghiries, 1873.
- Britton, S.C. Ancient Indian Iron; Nature 134, 1934
- Burgess, J. Dolmens at Konur and Aiholli. Ind. Ant. III. 1874.
- Burkitt, M.C. The Old Stone Age; Cambridge, 1933.
- " " & Cammiade, L.A. Fresh Light on the Stone Ages in India. Antiquity IV, 1930.
- Cammiade, L.A. Pigmy Implements from the Lower Godavari, Man in India IV. 1924.

- Cammiade, L.A. Urn Burials in the Wynaad. Man 1930, No. 135.
- " " Remains at Tangal, Chinglepur Dr. Man. 1930, No.136.
- " " Iron Smelting of the Kois. Main 1931, No.65.
- " " See also Burkitt.
- Campbell, J.M. Cell Graves at Konnur, Belgaum District Gazetteer, 1884.
- Carey, J.J. On the Stone Circles near Khaiwarra. P.A.S.B. 1871.
- Carlleyle, A.C.L. Report of a Tour in E. Rajputana in 1871-3. A.S.I. Reports, 1878.
- Carter, H.J. A Geographical Description of Parts of the S.E. Coast of Arabia. J.B.B.R.A. III.1851.
- Casal, J.M. Fouilles de Virapatnam - Arikamedu, Paris, 1949.
- Caton-Thompson, G. The Tombs and Moon Temple of Hureida, 1944.
- Chakravarti, N.P. The Minor Rock Edicts of Asoka, A.I.4. 1947.
- Champion - A Preliminary Survey of the Forest Types of India and Burma.
- Childe, V.G. Man Makes Himself, London, 1936.
- " " Social Evolution, 1951.
- " " Megaliths, Ancient India 4, 1947.
- Codrington K.de B. Ancient Sites Near Ellora, Ind. Ant.19
- " " " Ancient Indian Hand Mirrors, Man,1929, No.130.
- " " " Pottery from Bhita, Man, 1929 No.101.
- " " " Indian Cairn and Urn Burials, Man,1930 No.139.
- " " " Ancient India, London, 1926.
- Cole, R. Note on Certain Mounds of Scabiaceous Character, found near Bellary, M.J.L.S VII.1838.

- Cole, R.A. Cromlechs in Coorg, P.A.S.B. 1868.
 " " Cromlechs in Maisur, Ind. Ant.II.1873.
- Cousens, H. List of Antiquarian Remains in His Highness the Nizam's Territories, Calcutta, 1900 (A.S.I. New Imperial Series, XXXI).
 " " Remains at Tet (Tagara). A.R.A.S.I. 1902-3.
- Crooke, W. Bull Baiting, Bull Racing, Bull Fighting, Folklore, 1916.
- Cruttenden Stone Graves in Somaliland; Transactions of the Geological Society of Bombay, VIII Pt.2.
- Cunningham, A. The Bhilsa Topes, London, 1854.
 " " Coins of Ancient India, 1891.
- Davies, C.C. A Historical Atlas of India, London, 1949.
- Deshpande, C.D. Western India: A Regional Geography. 1948.
- Dikshit, K.N. Presidential Address: 27th Session, I.S.C.
- Dikshit, M.G. Some Beads from Kondapur, H.A.S. 16. Hyderabad, 1952. (With an Introduction by Sreenivasadra).
 " " Etched Beads of India, Poona, 1949.
 " " & Sankalia, H.D. Excavations at Brahmapuri, Poona, 1952.
- Dikshitar, V.R.R. Disposal of the Dead in S. India. 10th A.I.O.C. 1940.
 " " S'ilappadikaram, English Translation. 1939.
 " " History of Irrigation in S. India. Indian Culture 12, 1945.
 " " Prehistoric South India, Madras, 1951.
- Dumont, L. A Remarkable Feature in S. Indian Pot Making. Man. No.121 1952.

- Elwin, Verrier. The Agaria, London, 1942.
- Fawcett, F. Prehistoric Rock Pictures near Bellary S. India. Asiatic Quarterly Review. 1892.
- " " Rock-Cut Sepulchral Chambers in Malabar. J.R.A.I. XXV. 1896.
- Febvre, L. A Geographical Introduction to History London, 1925.
- Fergusson, J. Architecture of Dharwar and Mysore. (Includes notes by Meadows Taylor). " " Rude Stone Monuments, London, 1872.
- Fleet, E.J. Dynasties of the Kanarese Districts, Gazetteer of the Bombay Presidency, Vol. I. 1882.
- " " Tagara, Ter. J.R.A.S. 1901.
- Foote, R.B. Notes on Some recent Neolithic and Palaeolithic Finds in S. India. J.R.A.S.B. LVI. Pt.2. 1887.
- " " Geology of the Bellary District, M.G.S.I. XXV. 1895.
- " " Catalogue of Prehistoric Antiquities in the Collection of the Government Museum, Madras, 1901.
- " " Indian Prehistoric and Protohistoric Antiquities: Catalogue Raisonne, Madras 1914.
- " " Indian Prehistoric and Protohistoric Antiquities: Notes on their ages and Distribution, Madras, 1916.
- Forbes, R.J. Metallurgy in Antiquity, Leyden, 1933.
- Fox, C. The Personality of Britain, 4th Edition Cardiff, 1943.
- Gairola, C.K. A Cultural History of the Satavahana Dynasty, Ph.D. Thesis of London University, 1949.
- Garland H. & Bannister, C.O. Ancient Egyptian Metallurgy, London, 1927.
- Garrod, D.A.E. The Stone Age of Mount Carmel. Oxford, 1937.

- Ghosh, A. Pottery of Ahicchatra. A.I.1.1946.
 " " Taxila (Sirkap) A.I.4. 1948.
 " " Rajgir, A.I.7. 1951.
- Goodwin, A.J.H. The Loom of Prehistory. Capetown 1946.
 " " Method in Prehistory, 2nd Edn. 1953.
- Gordon, D.H. The Cultures of Maski and Madhavpur.
 J.R.A.S.B. 1943.
 " " Excavations at Maski, Antiquity XXX,
 1945.
 " " Rock Engravings of Kupgallu Hill,
 Bellary. Man, 1951. No.204.
 " " Early Use of Metals in India and
 Pakistan. J.R.A.I. 80.
 " " Stone Industries of the Holocene, A.I.
 1950.
- Goswami, K.G. Excavations at Bangarh. Calcutta, 1948.
- Grigg, H.B. A Manual of the Nilagiri District,
 Madras. 1880.
- Hadfield, Sir R. Analyses of Iron from Ceylon. J.I.S.I.
 1912.
 " " " Analysis of Steel from Besnagar,
 A.R.A.S.I. 1913-14.
- Haimendorf, C.Von.F. The Chenchus, London, 1943.
 " " " " The Reddis of the Bison Hill, 1946.
 " " " " The Raj Gond of Adilabad, Vol.I. 1948
 " " " " Megalithic Ritual Among the Gadabas
 and Bondos of Orissa. J.R.A.S.B. IX.
 1943.
 " " " " Man in India, 25. 1945.
 " " " " Culture Strata in the Deccan, Man, 19
 No.9.
- Heron, A.M. A Popular Geology of Hyderabad.
 Hyderabad, 1948.
- Holder, E. Pottery from Madras, J.I.A.I.VII.
- Hooker, Sir J.D. Flora of British India, London, 1875-9
- Hornell, J. The Chank Shell Cult in India.
 Antiquity, 59. 1941.

- Hosten, H. Dolmens et ^mCrolechs dans les Palnis
Brussels. 1905.
- Hunt, E.H. Hyderabad Cairns. J.H.A.S. 1916.
" " Hyderabad Cairn Burials, J.R.A.I. LIV
1924.
- Hutton, J.H. The Angami Nagas, 1921.
Hyderabad Archaeological Series.
- Iyer, L.A. Krishna Kerala Past and Present. Vol.1.1948.
" , L.A.K. Mysore Tribes and Castes. Mysore, 192
36.
- Iyengar, P.I. The Trade of India from the Earliest
Srinivas. Times to the 2nd. Century A.D. I.H.Q.
I.II. 1925-6.
- Jagor. Verhandlungen der Berliner Gesell-
schaft fur Anthropologie, 1878.
- Jayasval, K.P. The Ghosundi Inscription, Ep.Ind. XVI.
p.25.
- Jerdon, T.C. The Birds of India, Calcutta, 1862.
- Joshi, S.B. Etymology of Place Names Patti-Hatti.
A.B.O.R.I. XXXIII. 1952.
- Journal of the Hyderabad Geologircal Survey.
- Jouveau-Dubreuil, G. Ancient History of the Deccan, Pondi-
cherry 1920.
- Kanakasabhai, V. The Tamils Eighteen Hundred Years Ago
Madras. 1904.
- Kelso, J.T. & The Potters Technique at Tell Beit
Thorley, J.P. Mirsim. A.A.S.O.R. 1941-3.
- King. W.R. Aboriginal Tribes of the Nilgiri
Hills. Journal of Anthropology, 1870.
- Kosambi. D.D. Ancient Kosala and Magadha. J.B.B.R.
N.S. XXVII.
- Krishna, M.H. Excavations at Chandravalli. A.R.M.A.
1929.

- Krishna, M.H. Excavations at Brahmagiri. A.R.M.A.D. 1940. 41, 42.
- Krishnamacharlu, C.R. Kannada Inscriptions at Kopbal. H.A.S.12
- Krishna-Murthy.L.S. Geology of Parts of Mahbubnagar and Gulbarga Districts. J.H.G.S.IV. Pt.1. 1941.
- Krishna-Rao, B.V. Early History of Andhra desa, Madras, 1942.
- Krishnaswami, V.D. Stone Age India. A.I.3. 1947.
" " Megalithic Types in S. India. A.I.5.194
- Lal, B.B. Sisupalgarh, 1948. A.I. 5. 1949.
" " Chalcolithic Phase in S. Indian Pre-history. J.R.A.S.B. Letters, XV.1949.
" " Further Copper Hoards. A.I.7.1951.
" " Recent Excavations at Hastinapura. Illustrated London News. Oct.1952.
- Leakey, L.S.B. The Stone Age Cultures of Kenya Colony. Cambridge. 1931.
- Logan, W. A Malabar Manual. 1887.
" " Find of Ancient Pottery in Malabar. Ind.Ant.1879.
- Longhurst, A.H. Rock Cut Tombs near Calicut. A.R.A.S.I. 1911-12.
" " Kudatini Cinder Mound. A.R.A.S.I.1912-1
" " Cairns in the Kurnool District, A.R.A.D. 1914-15.
" " Hampi Ruins Described. Delhi.1933.
- Lowie. R.H. Primitive Society, 1921.
- Lubbock. J. Prehistoric Times. 1st. Edn. 1865.
- McCrindle, J.W. Ancient India as Described by Ptolemy. London. 1885.
- Mackenzie. J.S.F. Rude Stone Archaeology of the Hassan District. Ind.Ant.II. 1873.
- Mahadevan, C. Geology of the S. and S.W. Parts of Surapur Taluk of Gulbarga District. J.H.G.S.IV. Pt.1.1941.

- Mahadevan, C. A Note on the Archaeological Finds in S. and S.W. Parts of Shorapur Taluk. (Unpublished).
- Mahalingam, Economic Life in the Vijayanagara Empire. Madras, 1952.
- Majumdar, R.C. & Others. The Age of Imperial Unity, Bombay, 1951.
- Marshall, Sir J.H. Excavations at Bhita, A.R.A.S.I. 1911-12.
- " " Mohenjo Daro and the Indus Civilization London, 1931. (Vols.1-3).
- " " Taxila, London 1951. (Vols.1-3).
- Menon, K. Govinda. Red Painted Pottery from Cochin. Man; 1937.
- Meulen, D. van der & Weissman, H. Von. Hadramaut - Some of its Mysteries revealed. Leyden, 1932.
- Mitra, P. Prehistoric Cultures and races in India J.D.L.C.U.I. 1920.
- " " Prehistoric Arts and Crafts in India. J.D.L.C.U.III. 1920.
- " " Prehistoric India. 2nd. edn. 1927.
- Modi, Sir J.J. Ash mounds in Raichur Dr. J. Anth. S.B. 1931.
- Morgan, L.H. Ancient Society, 1877. 1st. Indian Edition ? 1952.
- Moticantra. Geographical and Economic Studies in the Mahabharata: Upayana Parva. 1945.
- Movius, H.L. Early Man and Pleistocene Stratigraphy in S. and E. Asia, New York, 1944.
- Mukherjee, S.K. Geology of parts of Gulbarga District. J.H.G.S. IV Pt.1. 1941.
- Munn, L. Geology of the Nizam's State, 1915.
- " " Ancient Mines and Megaliths in Hyderabad. Manchester Memoirs LXIV. 1921.
- " " Artifacts and Fossil bones from the Godavery Valley. A.R.H.A.D. 1928.
- " " & others Geology of the W. portion of Raichur, etc. J.H.G.S. II pt.1. 1934.

- Munn L. Prehistoric and Protohistoric finds of the Raichur District. Man in India. 1935.
- " " Notes on the Ancient Method of Gold Mining. T.M.G.11. 1935.
- " " & others. Geology of the E. portion of Raichur etc. J.H.G.S. III Pt.1. 1936.
- Musil, A. Arabia Deserta, New York, 1927.
- " " The Northern Hegaz. New York, 1926.
- Naiyar, T.B. Studie in S. Indian Pottery. M.A.Thesis for London University, 1931.
- Neogi, P. Iron in Ancient India, Calcutta, 1914.
- Newbold, T.J. Note on the Occurrence of Volvanic Scoria in the Southern Peninsula. J.A.S.B.1836.
- " " On Some Ancient Mounds of Scorious Ashes in S. India. J.R.A.S.1843.
- " " Note on the Process of Quarrying and Polishing Granite among the Indians. J.R.A.S. 1843.
- " " Ancient Sepulchres of Panduvaram Dewal. J.R.A.S.1852.
- Newton, T.V. See Anglade, A.
- Padfield, J.E. The Hindu at Home, 2nd. edn. Madras. 1908.
- Panchamukhi. Dolmens and Cairn of the Karnatak, 1946.
- Petrie, Sir W.M. Methods and Aims of Archaeology. London 1904.
- Flinders. Weapons and Tools, London 1917.
- " " Weapons and Tools, London 1917.
- Philby, E. St.J. Sheba's Daughters. London, 1939.
- Phillips, M. Tumuli in the Salem District. Ind.Ant. II.1873.
- Piggott, S. A Cylinder Seal from S. India. Antiquity, June 1944.
- Pillai, V. Kanaka-sabhai. The Tamils Eighteen Hundred Years Ago. Madras, 1904.

- Pillai, K.N. S'ivaraja. Chronology of the Early Tamils. Madras, 1932.
- Puri, K.N. Excavations at Rairh., 1942.
- Raghavan, M.D. & Aravamathan, T.G. Note on Excavations in a Pre-historic Site at Kilpauk, Madras, Current Science III, 1934.
- Rama-Rao, M. Glimpses of Dakkan History, Calcutta. 1951.
- Rapson, E.J. Catalogue of Coins of the Andhra Dynasty, London 1900.
- Rathjens, C. & Wissman, H.V. Vorislamische Altertumer. Hamburg. 1932.
- Raychaudhuri, G.C. History of the Western Chalukyas. Ph.D. of London University, 1948.
- Rawlinson, H.G. Intercourse between India and the Western World. Cambridge. 1916.
- Rea, A. Some Prehistoric Burial places in S. India. J.A.S.B. 1888.
- " Prehistoric Antiquities in Tinnevely. A.R.A.S.I. 1902-3.
- " Excavation at Perumangalam, A.R.A.D.M. 1910-11.
- " Excavation at Amaravati. A.R.A.S. 1908-9.
- " Prehistoric Remains at Perambair A.R.A.S.I. 1898-9.
- " Catalogue of Prehistoric Antiquities from Adichanallur and Perambair, Madras. 1915.
- Rice, L. Mysore and Coorg, Gazetteer. 1878.
- Richards, F.J. Some Dravidian Affinities. Q.J.M.S.B. 1917.
- " A Note on Some Iron Age Graves at Odugattur. J.R.A.I. 1924.
- " Anthropological Geography. Man In India. 1924.
- " Cultural Regions in India. Geography. 1929.

- Richards, F.J. Periods in Indian History. Ind.Ant. 1930.
- " " Geographical Factors in Indian Archaeology. Ind. Ant. 1933.
- " " The Wynad; Cultural Geography. Ind.Ant.1932.
- Rickard. T.A. Man and Metals. London 1932.
- Rivers. W.H.R. The Todas. London 1906.
- Rivett-Carnac. J.H. Prehistoric Remains in Central India, J.R.A.S.B. 1879.
- Rosenthal, E. Pottery and Ceramics, London, 1949.
- Rowland, B. The Art and Architecture of India, London 1953.
- Sahni, D.R. Excavations at Sambhar, 1936.
- " " Excavations at Bairat, 1938.
- Sankalia, H.D. Megalithic Monuments near Poona, Bulletin of D.C.R.I. 1940.
- " " Investigations into the Prehistoric Archaeology of Gujarat. 1941-2. Poona. 1946.
- " " Ancient and Prehistoric Maharashtra. J.B.B.R.A.S. N.S. XXVII. 1951.
- " " Antiquity of Glass Bangles in India, Bulletin of D.C.R.I. VIII. 1947.
- " " Cultural Significance of Saddle Querns J. Anth. S.B.1950.
- " " & Report on the Excavations at Brahmapuri, Kohlapur. Poona. 1952.
- Sastri, H. Krishna. The New Asokan Edict of Maski. H.A.S. 1915.
- " " The Munirabad Stone Inscription, H.A.S. 5. 1922.
- Sastri, K.Nilakanta. The Cholas. Madras. 1935-7.
- " " Foreign Notices of S. India. Madras. 1939.

- Saunders, A.J. Dolmens of the Palni Hills. Madras Mail Annual. 1928.
- Schapera, I. The Bantu Speaking Tribes of S.Africa London, 1937.
- Schoff, W.H. The Periplus of the Erythraean Sea, London, 1912.
- Sen-Gupta. K.K. On Megalithic Monuments in Cochin State, J.I.Anth.1. 1939-40.
- Seshadri, M. Prehistoric and Protohistoric Stone Industries of Mysore. Ph.D. of London University, 1951.
- Sewell, R. The Cinder Mounds of Bellary, J.R.A.S. 1899.
- " Prehistoric Burial Places in S. India J.R.A.S. 1902.
- " Roman Coins found in India. J.R.A.S. 1904.
- Shastri, Shama, R. The Arthasastra, Mysore, 1909.
- " " A few Inscriptions of the Ancient Kings of Anegundi. Q.J.M.S.B. 1917.
- Shorter Oxford English Dictionary.
- Simkin, E. The Agricultural Geography of the Deccan Plateau of India. 1927.
- Sivaramamurti, C. Geographical and Chronological Factors. A.I.6. 1950.
- Sircar, D.C. Successors of the Satavahanas, Calcutta. 1939.
- " Select Inscriptions, Calcutta, 1942.
- " See also Majumdar, R.C.
- Smith, V. Pigmy Flints. Ind. Ant.1906.
- " Asoka. Oxford, 1909.
- " Early History of India, 3rd.edn. 1914.
- Srinivasan, K.R. Megalithic Burials in Tamil Literature A.I.2. 1946.

- Subba-Rao, B. Stone Age Cultures of Bellary, Poona. 1948.
- " Prehistoric and Early Historic Culture of Bellary, Ph.D. Thesis of Bombay University. 1949.
- " Baroda Through the Ages. Baroda. 1953.
- Talbot, W.A. Forest and Flora of the Bombay Presidency.
- Tarn, W.W. The Greeks in Bactria and India, 1938.
- Taylor, P. Meadows. Ancient Remains at Jiwarji. J.R.A.S. Bombay, III, 1851.
- " " Notices of Cromlechs, Cairns etc. J.R.A.S. Bombay, IV. 1853.
- " " Descriptions of Cairns, Cromlechs, etc. T.R.I.A. XXIV. 1873.
- " " Megalithic Tombs in the Deccan. (Collected Papers). Hyderabad, 1941.
- Thomson, H.A. The Athenian Agora, Hesperia III, 1934.
- Thorley J.P. See Kelso, J.T.
- Thurston, E. Madras, A Regional Geography. Cambridge 1913.
- " Castes and Tribes of S. India (7 vols. 1909.
- " Ethnographic Notes 1905.
- Todd, K.R.O. Palaeolithic Industries of Bombay, J.R.A.I. 1939.
- " Microlithic Industries of Bombay, A.I.6. 1950.
- Tucker, W.H. Graves in Sulur Taluk. Man, 1930.No.13.
- Turner, Sir R.L. The Gavimath and Palkigundu Inscriptions of Asoka. H.A.S. 10. 1937.
- Tylor, Sir E.B. Primitive Culture, 4th edn. 1903.
- Vithianathan, S. The Pattu Pattu. Ph.D. Thesis of London University, 1951.

- Vavilov, N.I. The Origin, etc. of Cultivated Plants
Waltham. Mass. 1951.
- Waage. F.O. Antioch on the Orontes.
- Wadia, D.N. Geology of India. 1926.
- Walhouse, M.J. On Some Formerly existing antiquities
on the Nilgiris, Ind. Ant.II. 1873.
- " Notes on the Megalithic Monuments of
the Coimbatore district, J.R.A.S. N.S.
VII. 1875.
- " Miniature Pottery. Ind. Ant.IV.1875.
- Warmington, E.H. Commerce between the Roman Empire and
India.
- Watt, Sir G. Economic Products of India. Calcutta,
1889.
- Wheeler, Sir R.E.M. Arikamedu, A.I.2. 1946.
- " " Archaeological Planning for India.
A.I.2. 1946.
- " " Brahmagiri and Chandravallim 1947.
A.I.4. 1947.
- " " Archaeological Field-work in India.
A.I.5. 1949.
- Wissman and Rathjens, See Rathjens.
- Yakzdani, G. Excavation at Maul Ali, A.R.H.A.D. 1915
16.
- " Megalithic Remains. J.H.A.S. 1917.
- " Antiquities near Kopbal, H.A.S.10.1937.
- " Excavations at Kondapur. A.B.O.R.I.
XXII.1944.
- Zimmer, H. Myths and Symbols in Indian Art and
Civilization, Washington, 1946.

THE DEVELOPMENT OF EARLY CULTURES
IN THE RAICHUR DISTRICT OF HYDERABAD

VOL. III.

PLATES.

VOL. III. PLATES & CATALOGUE OF
ILLUSTRATED OBJECTS

Pls. 1 - 11 - Maps.

1. a) India: Physical.
 b) S. India: Geological.
2. India Rainfall.
3. a) Languages of the Deccan.
 b) S. India: Population.
4. Modern Crop Distributions.
5. Ancient Routes of the Deccan.
6. Raichur District: Geological and Physical.
7. Distribution of Sites in Raichur (Neolithic).
8. " " " " " (Post-Neolithic).
9. " " " " " (Pre-Medieval A).
10. " " " " " (Old Mining Sites).
11. " " " " " (Ash mounds, Stone Alignments).

Pls. 12-16 Topographical and General.

12. a) Manvi hill: A gneissic hill rising from the black cotton soil plain around it. (Site No.3).
- b) Kopbal - Malimalappa hill. The plain ground on the hill top used as a grave site and with traces of small surface drainage tank in foreground. (Site No.36)(Photos)
13. a) Benkal forest near Mugumpi.
- b) Benkal forest looking S.E. towards Shivapur hill. (Photos).
14. a) Kaimali village built on a rocky hill slope.
- b) Cattle pound adjoining farmhouse, Piklihal.(Photos).

26. 1 - 3. Maski - Lingsugur Rd., Site No. 87. Graves of Type A.4.
4. Lingsugur, Site No. 41. Grave of Type A.4. (Drawings.)
27. 1 - 5. Rajula banda. Site No. 86. Irregular cairn circle graves of Type B.2. (Drawings.)
28. 1). Shivapur, North. Site No. 93. Cist Grave of Type A.1.
2). Hankunti Site No. 25. Grave of Type B.2. (Drawings.)
29. a) Shivapur, North. Site No. 93. Cist Grave of Type A.1.
b) Kakulwaram Site No. 82. Circle grave Type B. (Photos.)
30. Gadwal - Latipur track, Sites 15 and 80. (Sketch map).
31. a) Gadwal - Latipur track, Site 15. Building G.II: wall foundations from north.
b) Potla Pahad, Site 80. Showing Medieval stone circle (? grave) and shrine. (Photos.)
32. Site 15 - Plan of Building G.II. (Drawing.)
33. " " " " " G.III. (").
34. a) Gadwal - Darur Rd., Site No. 75 Circle graves of Type B.
b) Darur. E. of Site No. 11. (Photos.)
35. a) Hankunti, Site No. 25. Cairn grave Type C.
b) " " " " Animal formed urn fragments. (Photos.)
36. a) Manvi, Site No. 86. (Sketch Plan).
b) Hankunti, showing relationship to Hampi Lager. (Sketch Plan).
37. a) Kallur (Site No. 30). (Sketch Plan).
b) Site No. 49. (" ").
38. a) Karatgi (Site No. 32) (" ").
b) Rodalkunda (Site No. 57). (Sketch map).

39. Kopbal (Site No. 36). (Sketch map).
40. Maski (Site No. 47). (" ").
41. a) Maski: view of alignments, W. of hill.
b) Pottery cists from Maski Museum. (Photos.)
42. a) Gaudur (Site No. 16) Plan of Ash mound.
b) Wandalli (Site No. 67) Plan of Ash mound. (Drawings after Munn).
43. Gaudur Ash Mound. (Site No. 16) (Sketch section, after description and photo by Munn).
44. Piklihal, Site No. 91. General view from east. (Photo).
45. " " " " Sketch Plan.
46. a) " " " " Area H looking east.
b) " " " " Area D looking towards A, cave on right. (Photos.)
47. a) " " " " Area D looking south.
b) " " " " Grave of Type A.4. in area G.II. (Photos.)
48. " " " " Graves in Area G.II (Drawings).
49. " " " " Graves in Area G.III(").
50. " Site VII - Plan.
51. " " " - Sections A & B.
52. " " " - Panorama (Photo).
53. a) " " VIIA
b) " " VIID (Photos.)
54. a) and b) VIIC Burial in (6) (Photos.)
55. a) " " VIIC " " " Detail of skull.
b) " " VIIB " "(10) (Photos.)
56. " " VIII Plan.
57. " " VIIIA Section.

58. a) Piklihal, Site VIIIA - Burial with stone axes in situ at foot, and blades by skull.
 b) " " " Pottery and terracottas from excavation and surface collections.

Pls. 59-95 Pottery and Terracottas.

- | | | |
|-----|--|--|
| 59. | Piklihal, Site No. 91. | Pottery from excavations (Drawing). |
| 60. | " " " " | Pottery from surface collections. (Drawing). |
| 61. | " " " " | Pottery from surface collections, (drawing). |
| 62. | " " " " | Pottery from surface collections, (drawing). |
| 63. | Anegundi " " 70 | Pottery from surface collections, (drawing). |
| 64. | Anegundi " " " Benkal Forest " 6 Billamrayan gudda Site No. 7. | Pottery from surface collections, (drawing). |
| 65. | " " " " 7 | Pottery from surface collections, (drawing). |
| 66. | Hunkunti Site No. 25. Jamshed Site No. 80. | Pottery from surface collections, (drawing). |
| 67. | " " " " | Pottery from surface collections, (drawing). |
| 68. | Kallur " " 30 | Pottery from surface collections, (drawing). |
| 69. | " " " " Karatgi " " 32 | Pottery from surface collections, (drawing). |
| 70. | Kavital " " 35 | Pottery from surface collections, (drawing). |
| 71. | Kopbal " " 36 | Pottery from surface collections, (drawing). |

72. Kopbal, Site No. 36. Pottery from surface collections, (drawing)
73. " (Malimalappa) Site No. 36. Pottery from surface collections, (drawing).
74. Lingsugur, Site No. 41. Pottery from Munn's excavations
75. Manvi, Site No. 86. Pottery from surface collections, (drawing)
76. " " " " " " " "
77. Maski " " 47 " " excavations and surface collections. (drawing)
78. " " " " " " " "
79. " " " " " " " "
80. " " " " " " " "
81. " " " " " " Col. Gordon's collection
82. Peddapahad " 55 " " surface collection (drawing)
- Potanhall " 92 " " " " "
83. Rodalkunda " 57 " " " " "
84. Sirwar " " 59 " " " " "
85. Raichur A Wares: synoptic morphology (Drawing).
86. " B " " " (1) "
87. " " " " " (2) "
88. " " " " " (3) "
89. " " " " " (4) "
90. " D " " " " "
91. a) Maski Museum. Red & Black Ware from Sultan Mohammed's field, Maski.
b) Miscellaneous pots from similar provenance, (Photos.)
92. a) Maski Museum. Pots from Maski excavations.
b) B2 painted sherds from Benkal forest (Photos.)

93. a) Maski - terracotta fragments collected by Munn and miscellaneous decorated sherds.
b) Kopbal - miscellaneous sherds including rouletted ware, C3 red ware, and decorated from surface collection (Photos.)
94. 'A' ware terracottas from various sources, (drawings).
95. a) Miscellaneous terracottas from Maski Museum (Photo).
b) Animal terracottas from Maski Museum (Photo).

Pls. 96-106. Stone Artifacts.

96. a) Neolithic polished axes from Maski (Maski Museum).
b) Neolithic polished axes from Billamrayan gudda (Maski Museum) (Photos.)
97. Piklihal, Site VIII. Polished axes and chert blades from Burial in (4) (Drawing).
98. Piklihal, Surface collection. Polished axes (Drawing).
99. " " " " " and pecked stone artifacts, (drawing).
100. Billamrayan gudda. Dolerite flakes and Blades. (Drawing)
101. Piklihal (Surface collection) Dolerite flakes and Blade (Drawing).
102. Piklihal, Excavations Site I. Microliths. (Drawing).
103. " " " I & Surface Microliths (drawing)
104. " " "VII " "
105. Billamrayan gudda (Surface collection) Microliths (Drawing.)
106. Krishna Bridge (Site No. 86) Microliths. (Drawing).

Pls. 107-8. Metal Technology.

107. S. Indian Iron Typology (Drawing).
108. Metal Technology: crucibles and tuyere (Drawing).

Figs. 109-114: Rock Paintings and Bruisings.

109. a) Humped bull with decorated horns. Painted in red ochre. From a tracing of original. Piklihal.
b) Humped bull with (?) object between horns. Bruised on rock. Other smaller human and animal figures, Maski. (Photos.)
110. a) Bruised human figures on rock. Piklihal, West of area M.
b) Human figures, one with staff, and other objects. Piklihal near Site VI. (Photos.)
111. a) Ochre painted figures from cave in Area M. Piklihal.
b) Ochre painted figures from cave in Area N. Piklihal. (Photos.)
112. a) Outline of bull engraved near Area M. (Piklihal).
b) Stone alignment AII at Site 15 (Photos.)
113. 1-3. Rock paintings from Koppal, cave.
4-6. Engravings " " "
7. Painting " " , rock shelters.
(Eye copy sketches).
114. Rock painting from Benkal forest (after copy by H.A.D)

Conventional Signs used

in

Pls 22,30,36,37,38,39,40,45.

Area of Neolithic occupation...



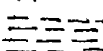
.. Post-Neolithic



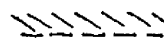
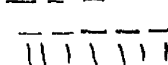
.. Pre-Medieval



.. Medieval-Modern.. ...

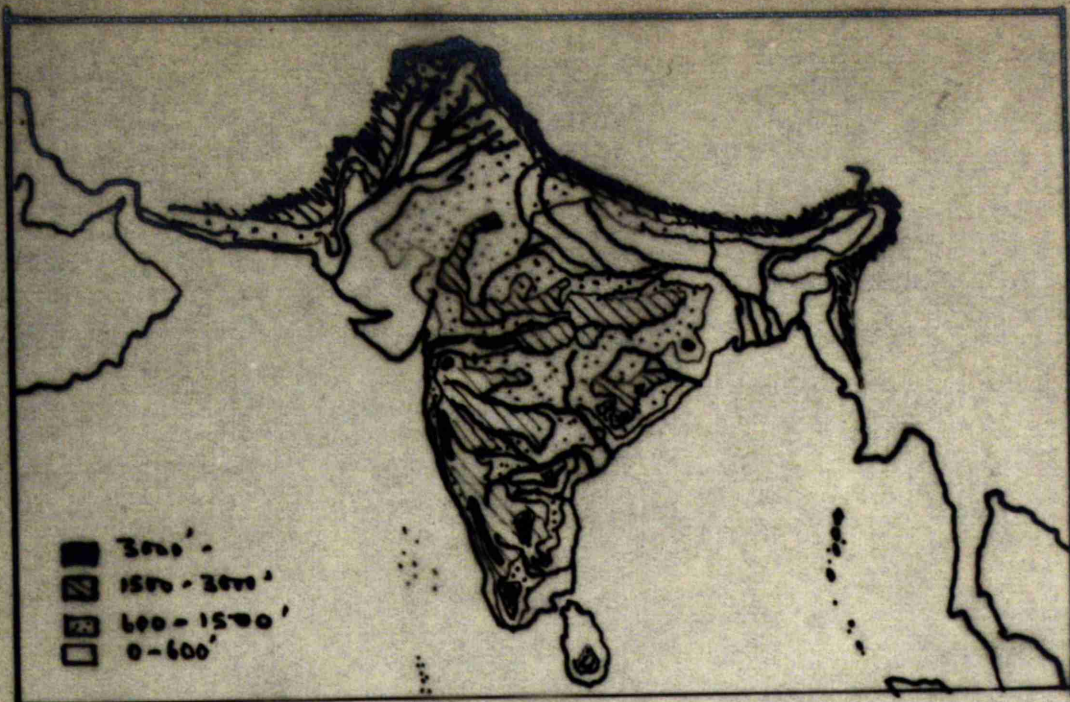


Stone revetment, terracing etc..

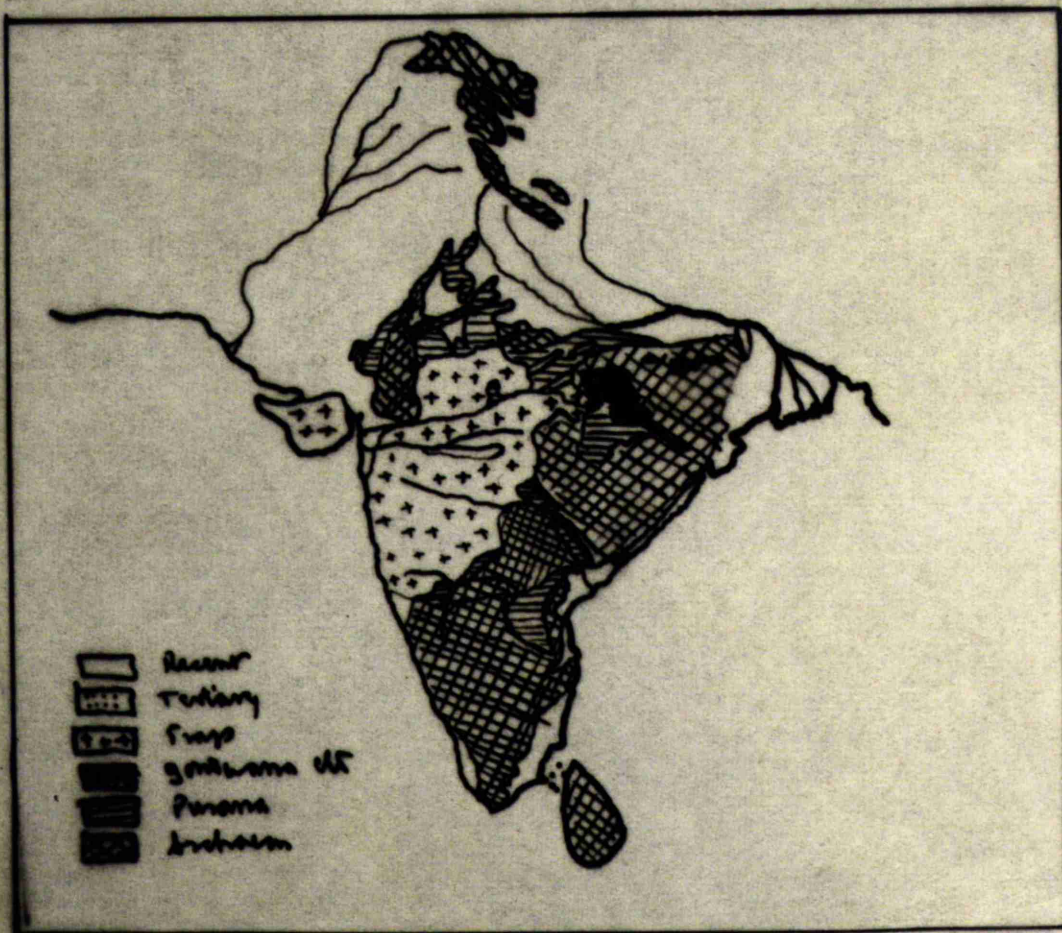


Pls. 1 - 11 - MAPS.

1. a) India: Physical.
- b) S. India: Geological.

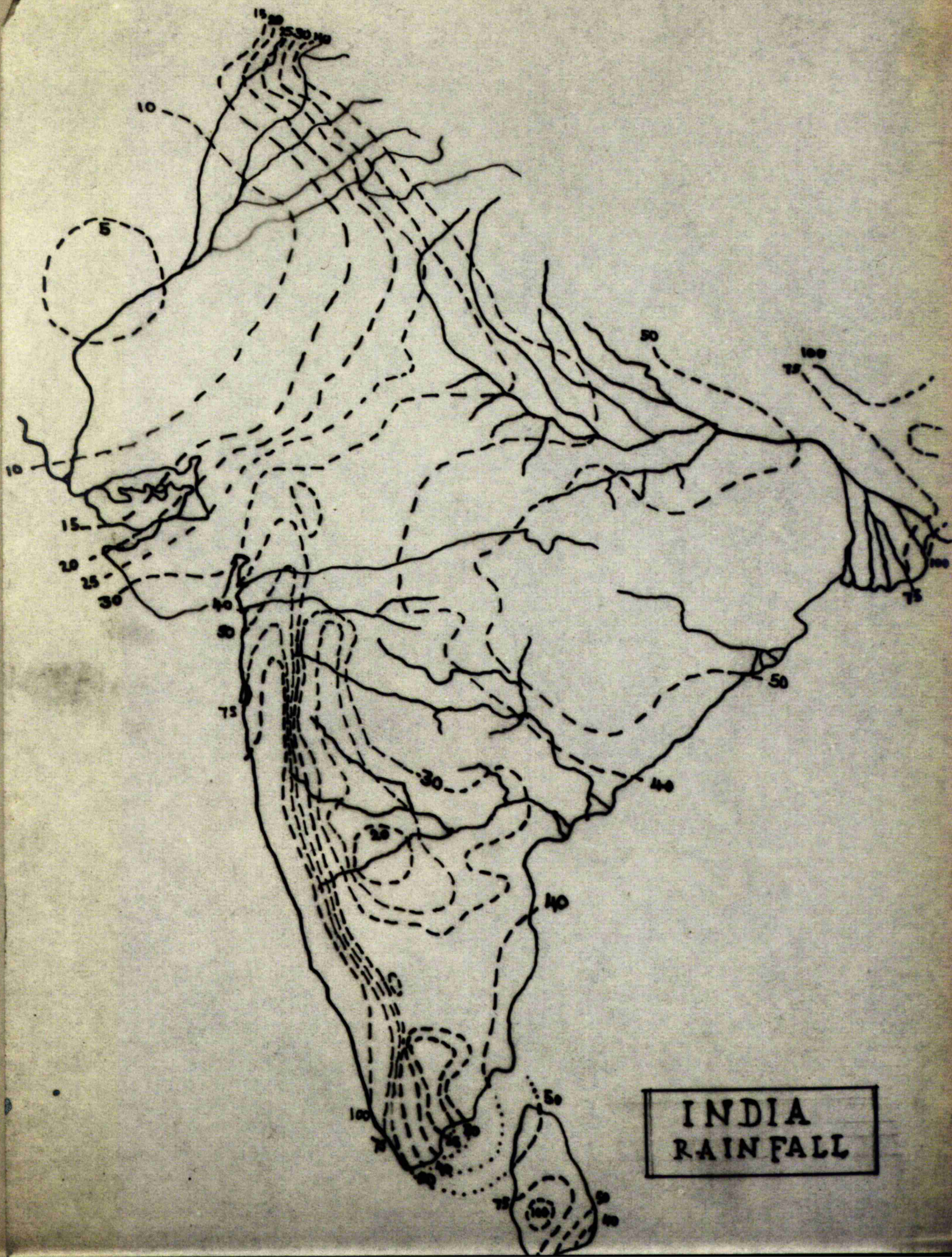


INDIA - PHYSICAL



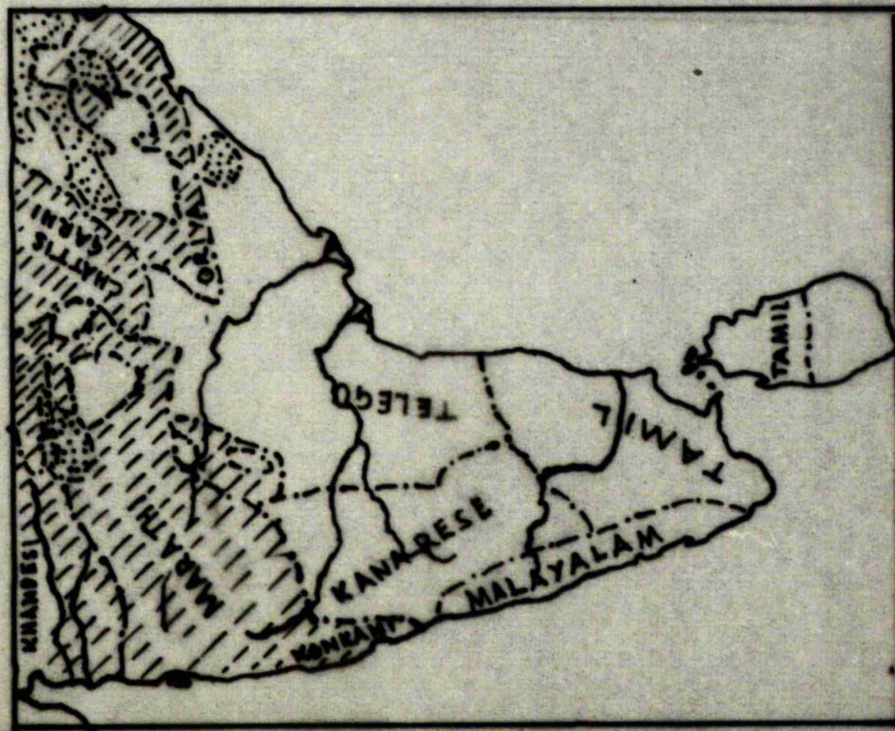
8. INDIA - MAIN GEOLOGICAL DIVISIONS

2. India Rainfall.

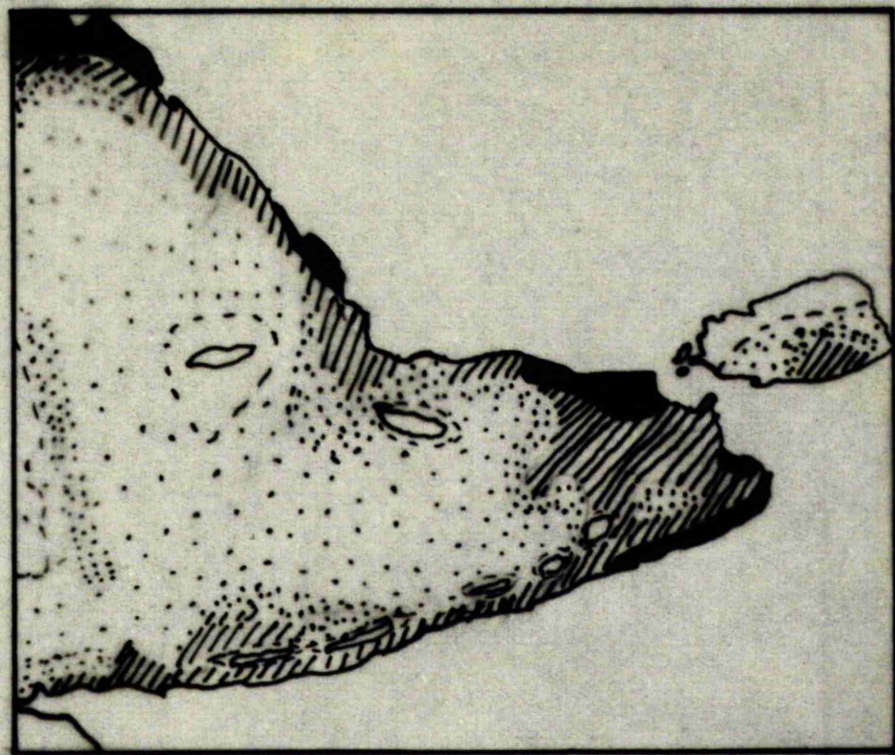


3. a) Languages of the Deccan.

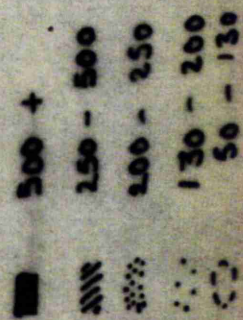
b) S. India: Population.



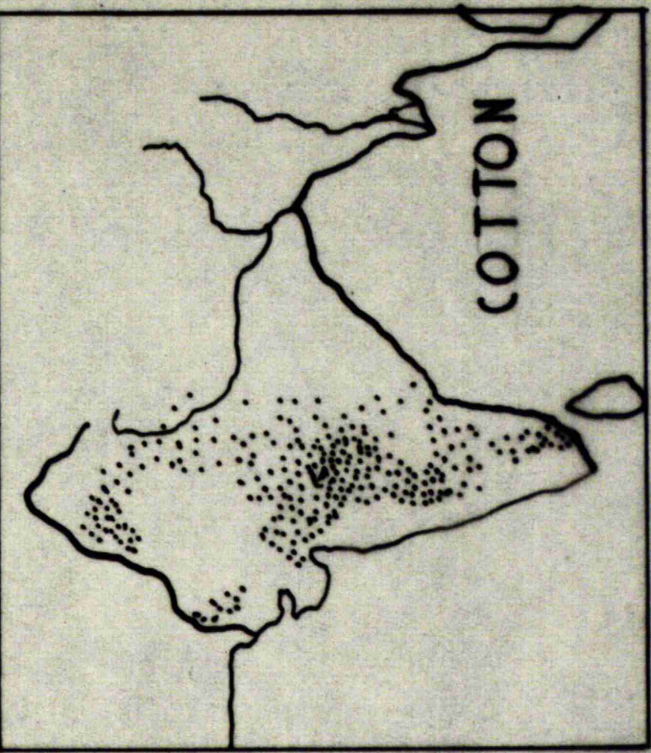
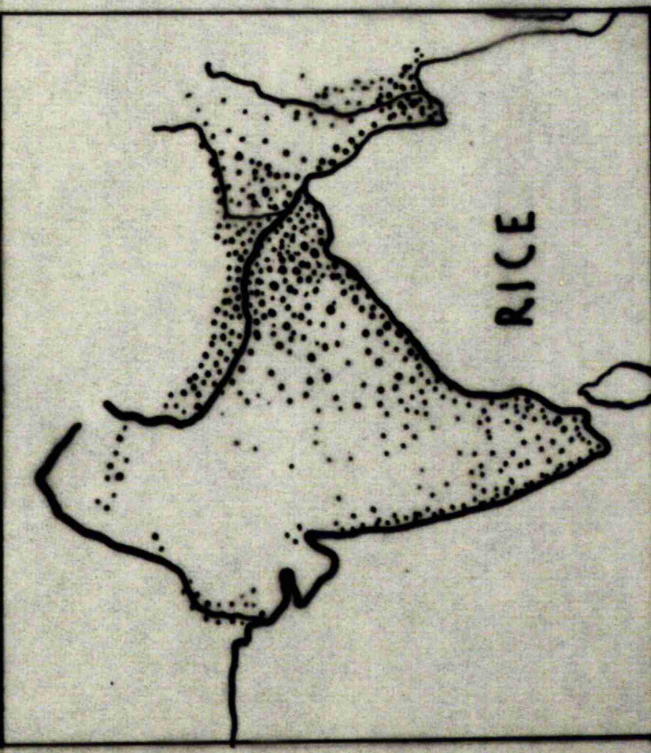
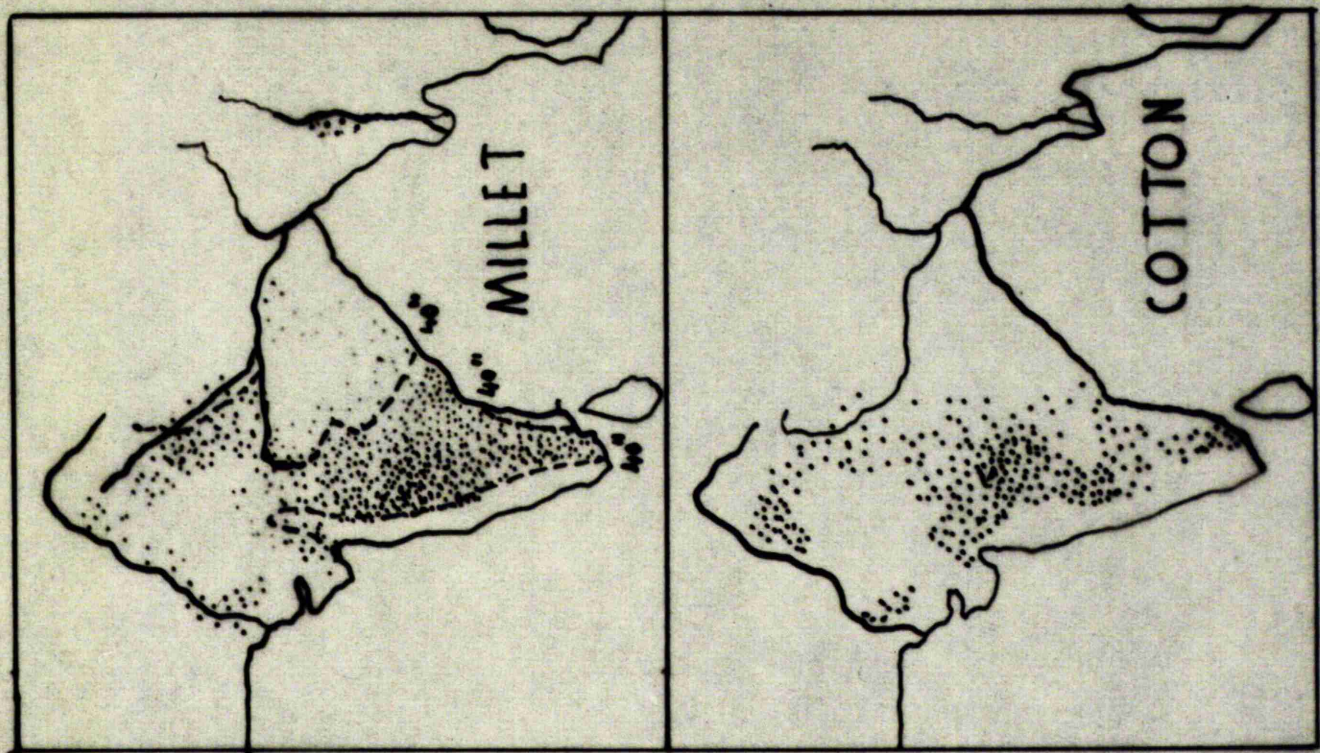
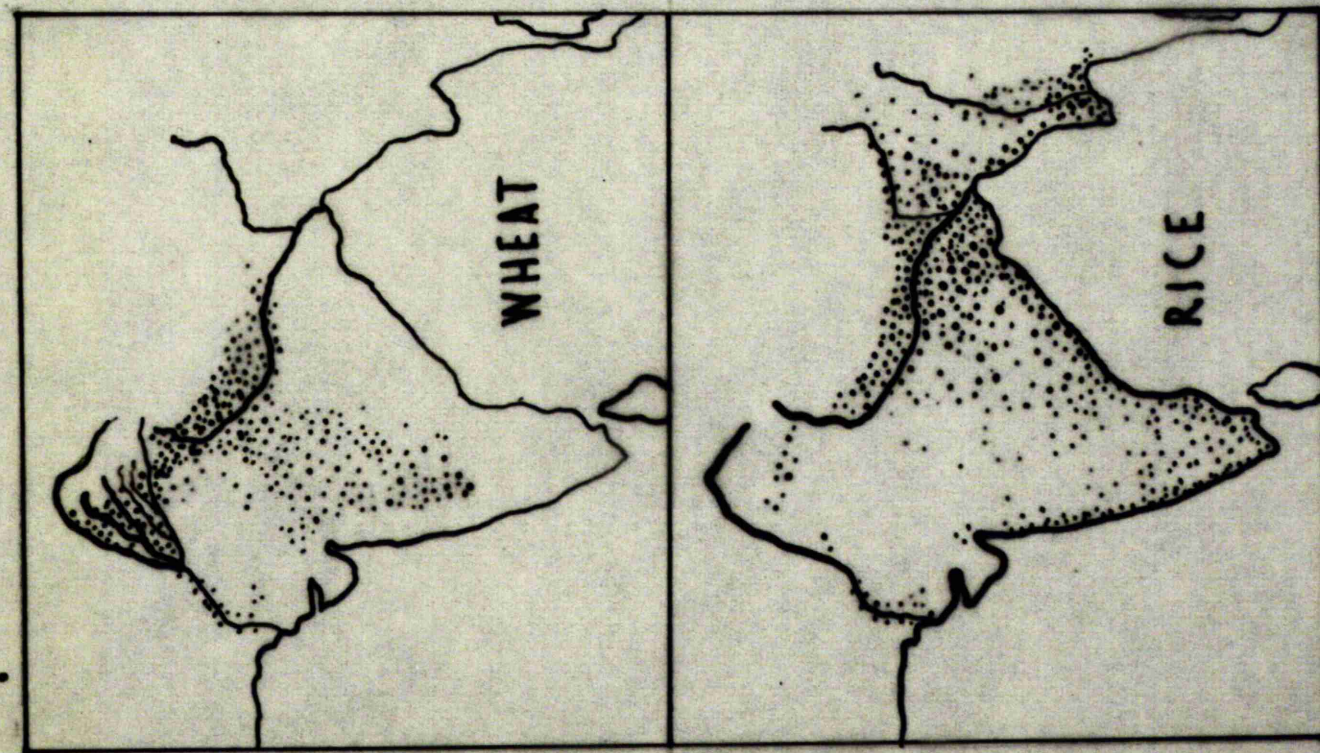
LANGUAGES OF THE DECCAN



S. INDIA POPULATION

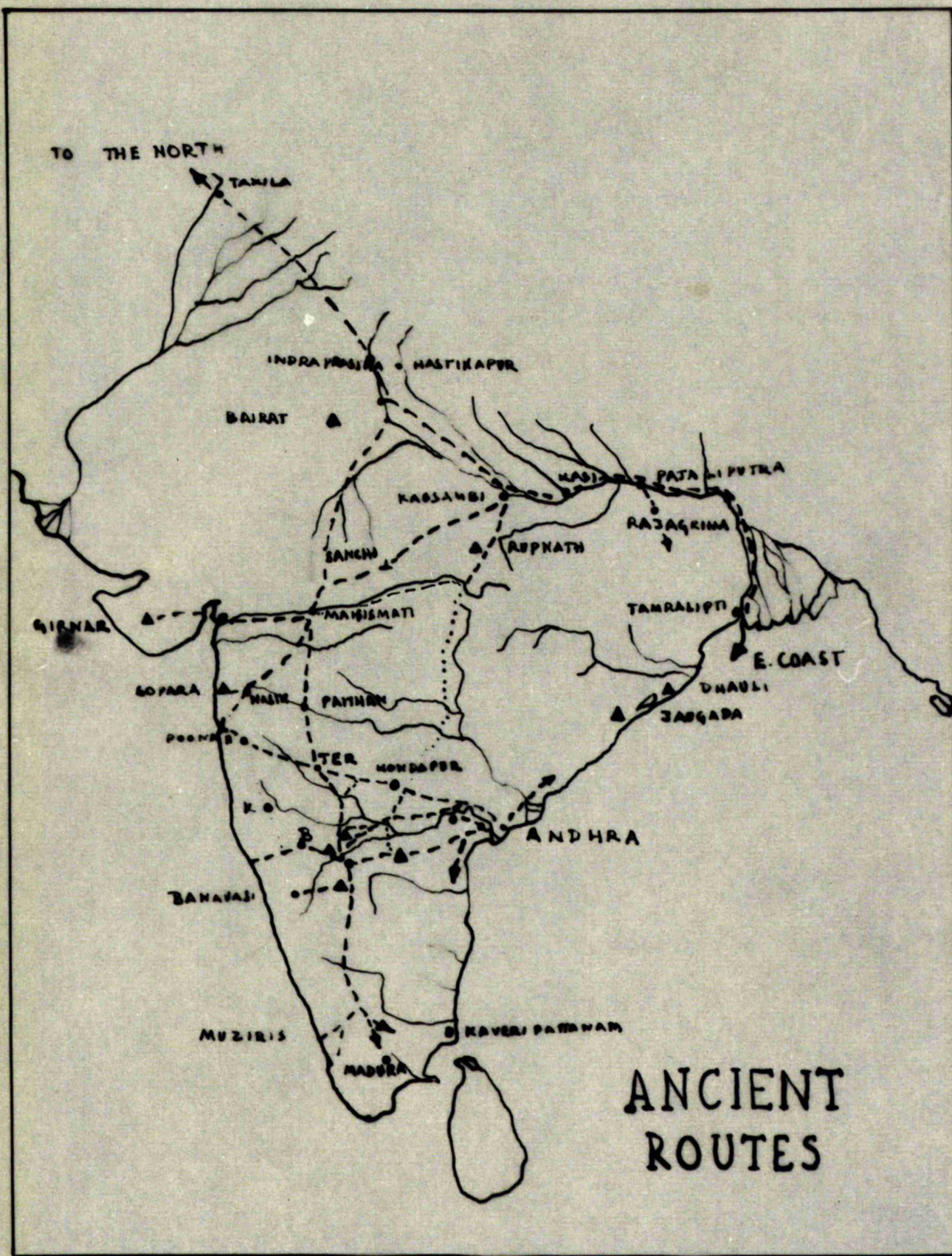


4. Modern Crop Distributions.

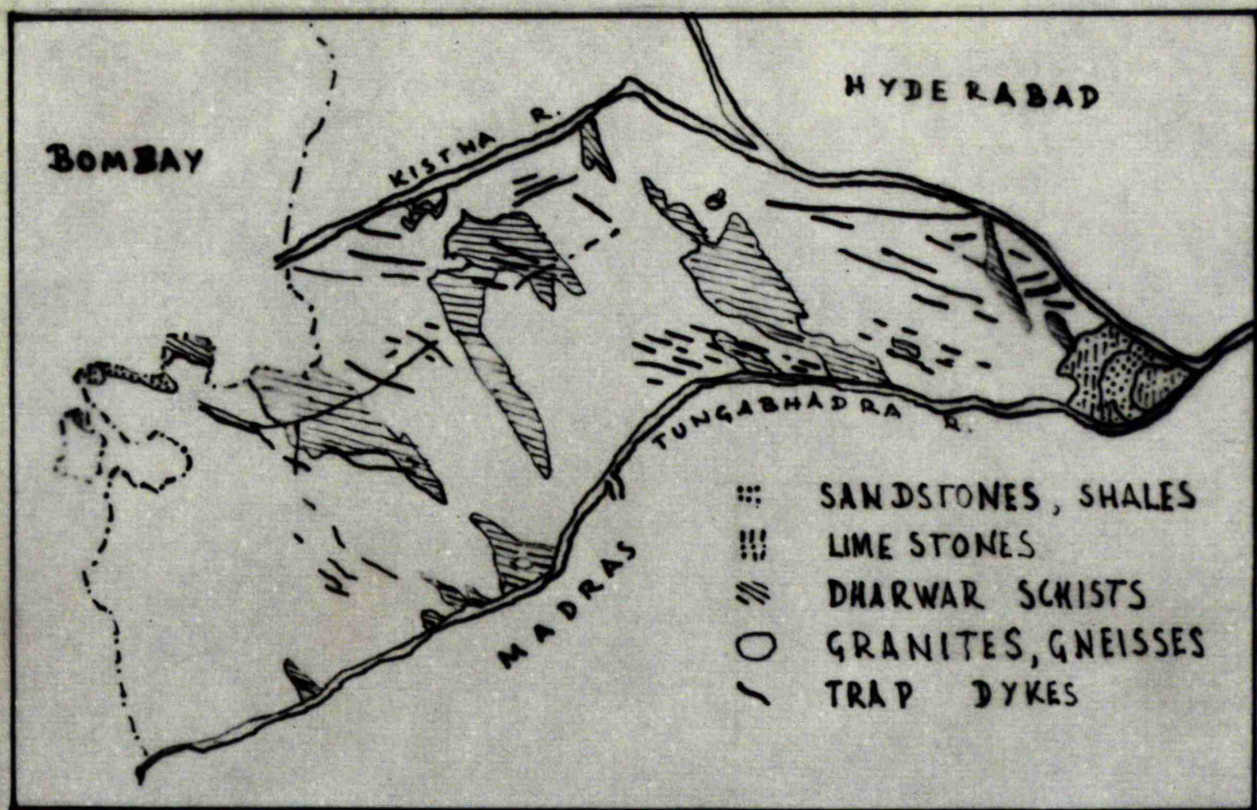


MODERN CROP DISTRIBUTION

5. Ancient Routes of the Deccan.



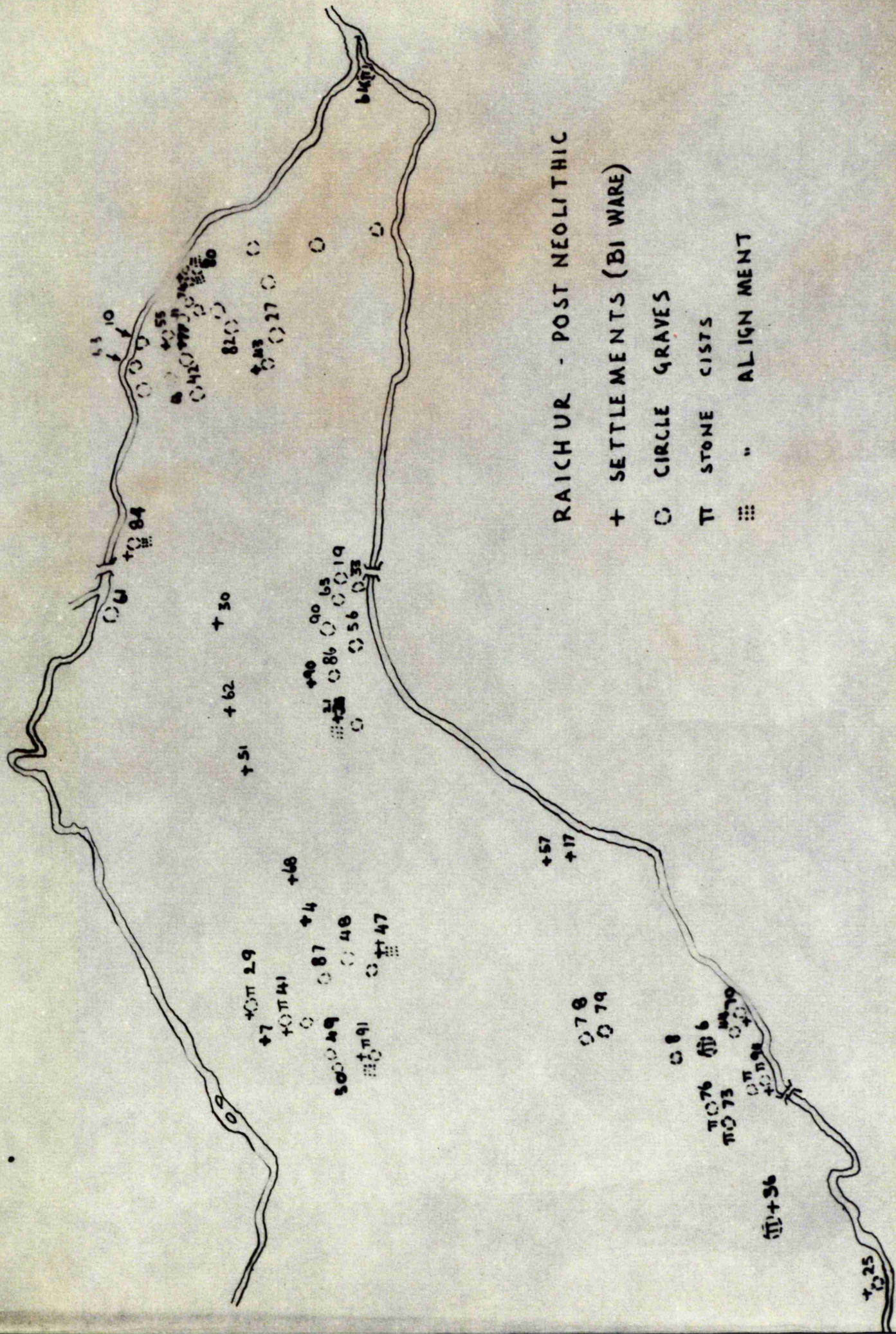
6. Raichur District: Geological
and Physical.



RAICHUR - GEOLOGICAL

7. Distribution of Sites in Raichur
(Neolithic).

8. Distribution of Sites in Raichur
(Post-Neolithic).



RAICHUR - POST NEOLITHIC

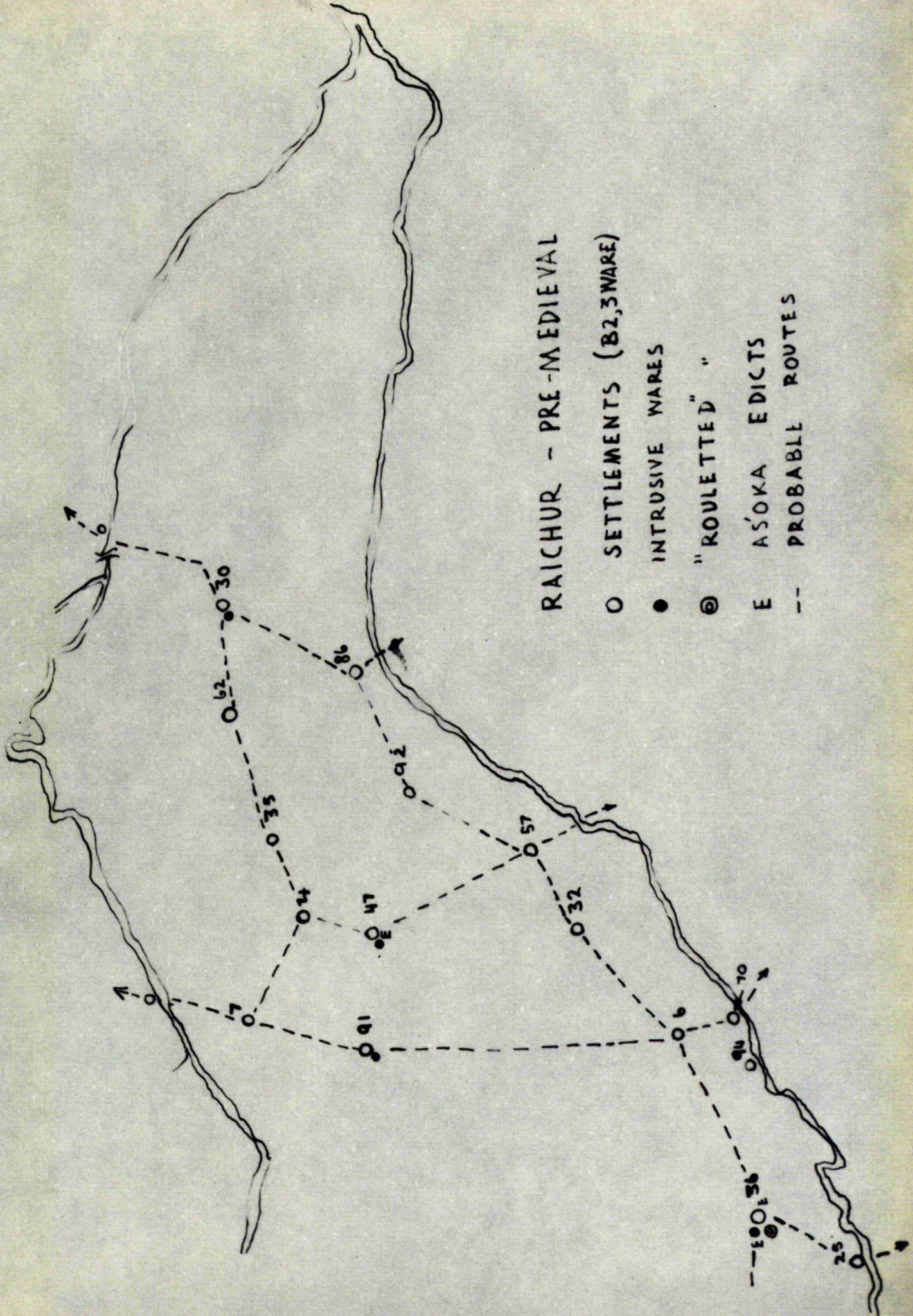
+ SETTLEMENTS (BI WARE)

○ CIRCLE GRAVES

T STONE CISTS

▢ ALIGNMENT

9. Distribution of Sites in Raichur
(Pre-Medieval A).



RAICHUR - PRE-MEDIEVAL

○ SETTLEMENTS (B2,3WARE)

● INTRUSIVE WARES

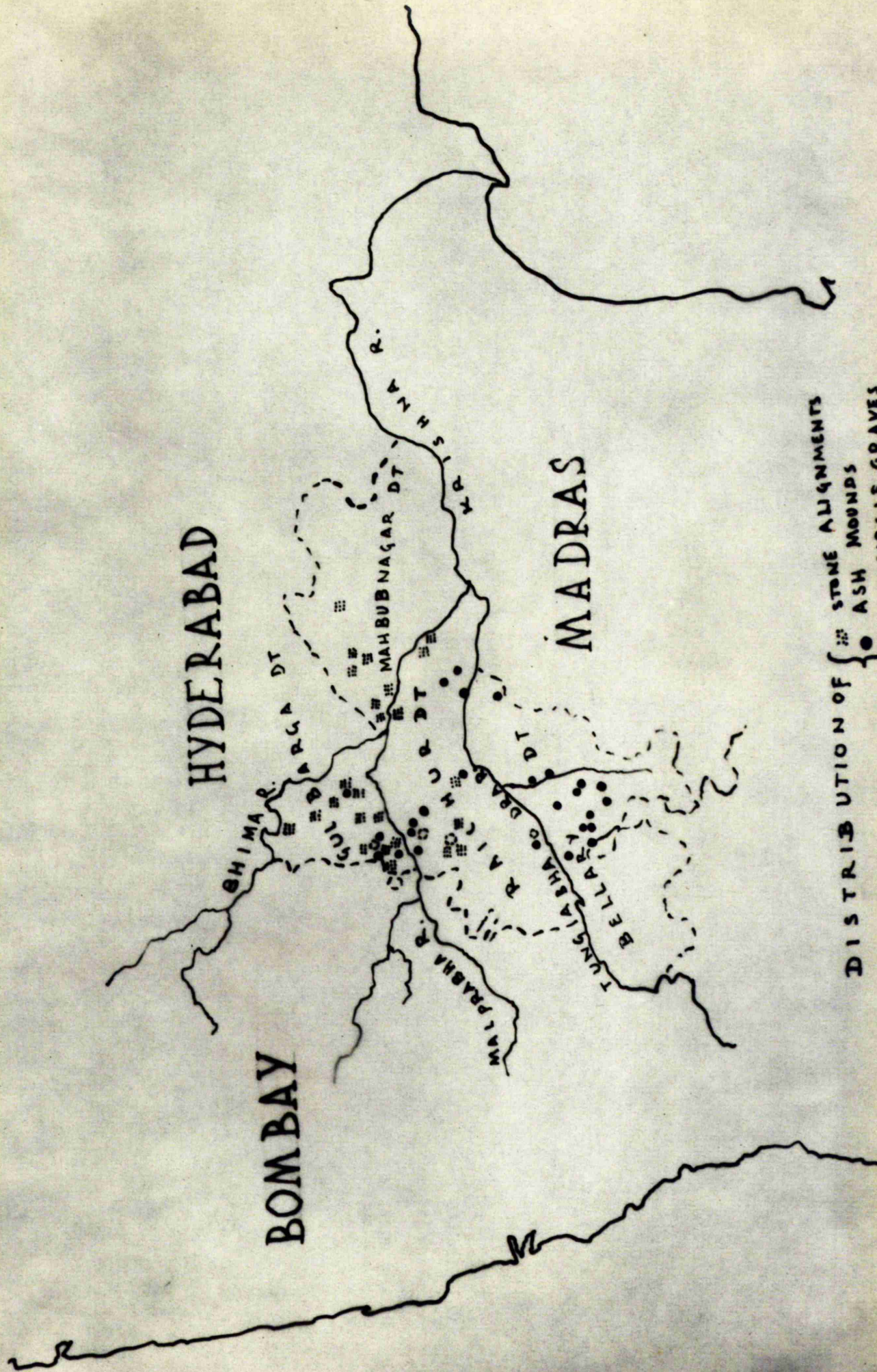
⊙ "ROULETTED" "

E ASOKA EDICTS

-- PROBABLE ROUTES

10. Distribution of Sites in Raichur
(Old Mining Sites).

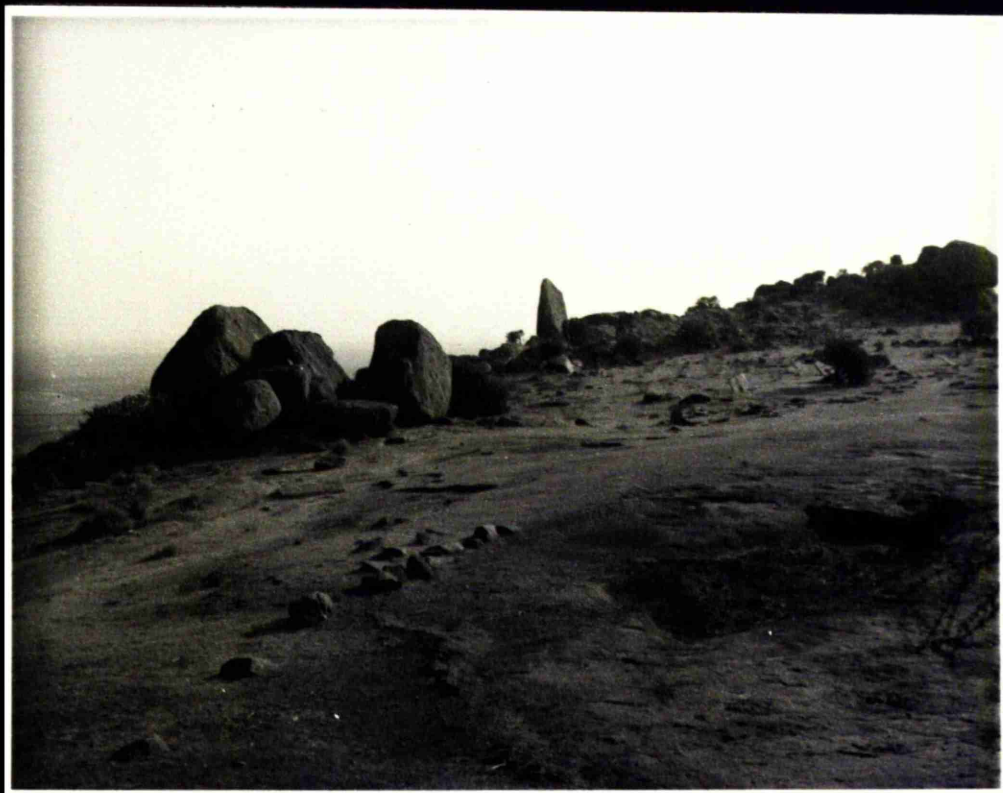
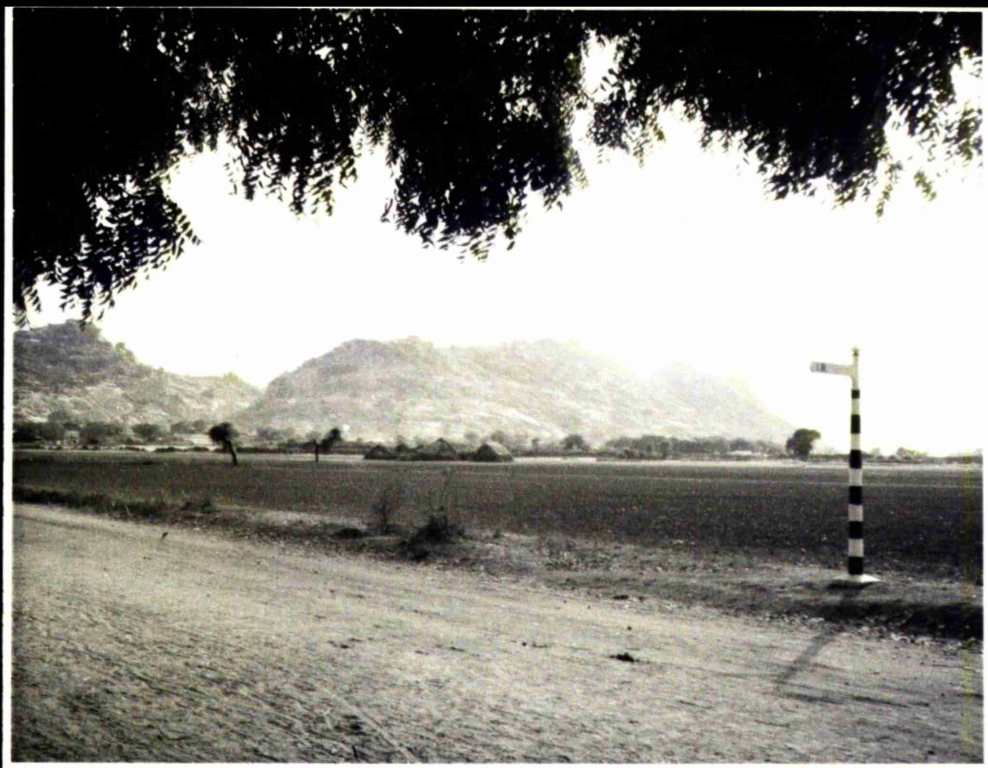
11. Distribution of Sites in Raichur
(Ash Mounds, Stone Alignments)



DISTRIBUTION OF {
 [] STONE ALIGNMENTS
 [•] ASH MOUNDS
 [⊙] ASH CIRCLE GRAVES

Pls. 12-16. Topographical and General.

1. a) Manvi Hill: a gneissic hill rising from the black cotton soil plain around it. (Site No. 3.)
- b) Kopbal-Malimalappa Hill. The plain ground on the hill top used as a grave site and with traces of small surface drainage tank in foreground. (Site No. 36) (Photos.)



13. a) Benkal Forest near Mugumpi.

b) Benkal Forest looking S.E. towards
Shivapur Hill. (Photos.)

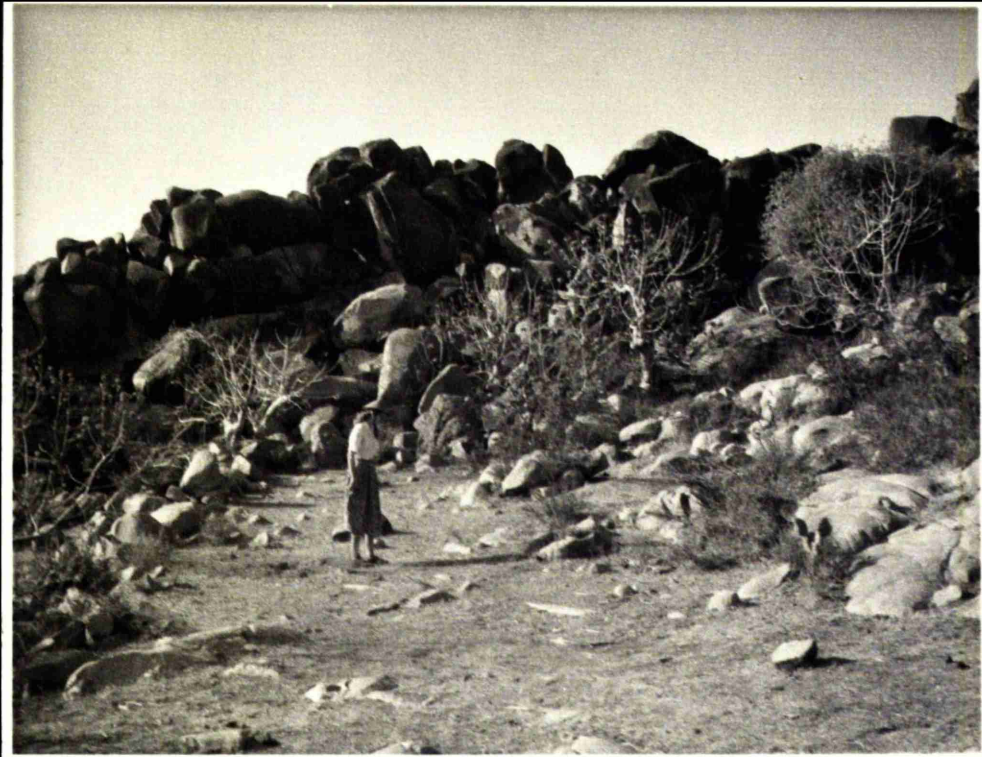


14. a) Kalmali village built on a
rocky hill slope.

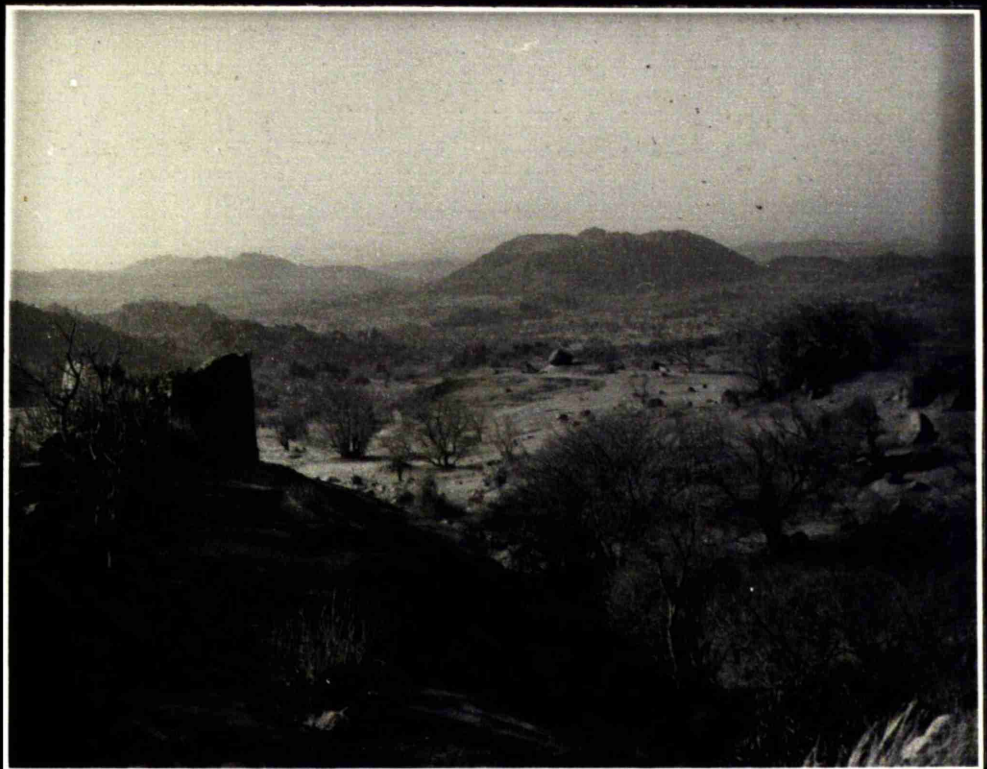
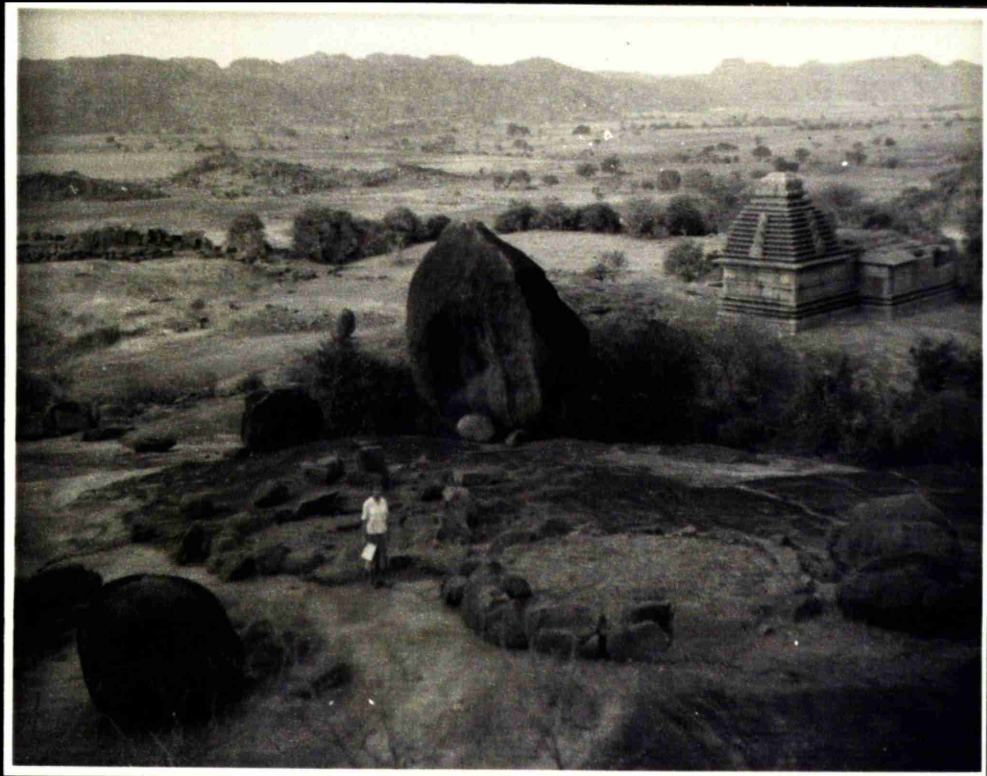
b) Cattle pound adjoining farmhouse,
Piklihal. (Photos.)



15. a) Anciently occupied terrace on
N.E. slopes of Billamrayan Gudda
Hill (Site No. 7)
- b) Shrine of Elamma, with miniature
stone cists and rough wooden images
and chariot (near Gonpahad village)
(Photos.)

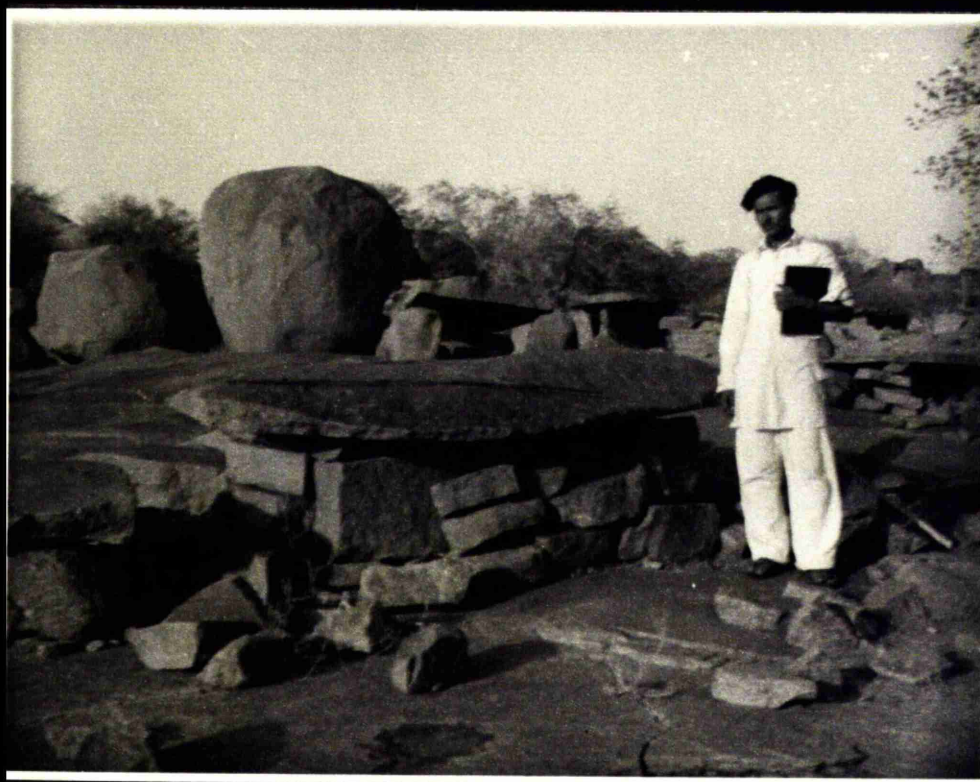
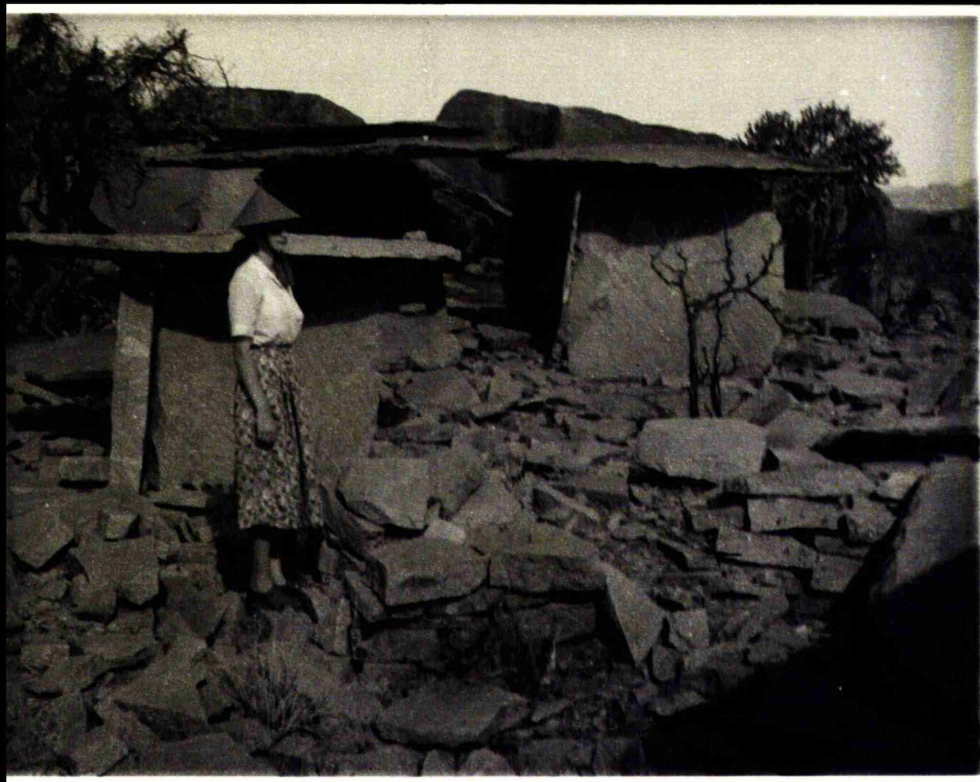


16. a) Benkal Forest: Ramaswami's Hill
near Mugumpi, with Medieval Temple
and Stone Circles.
- b) Benkal Forest: looking south towards
Hampi. (Photos.)



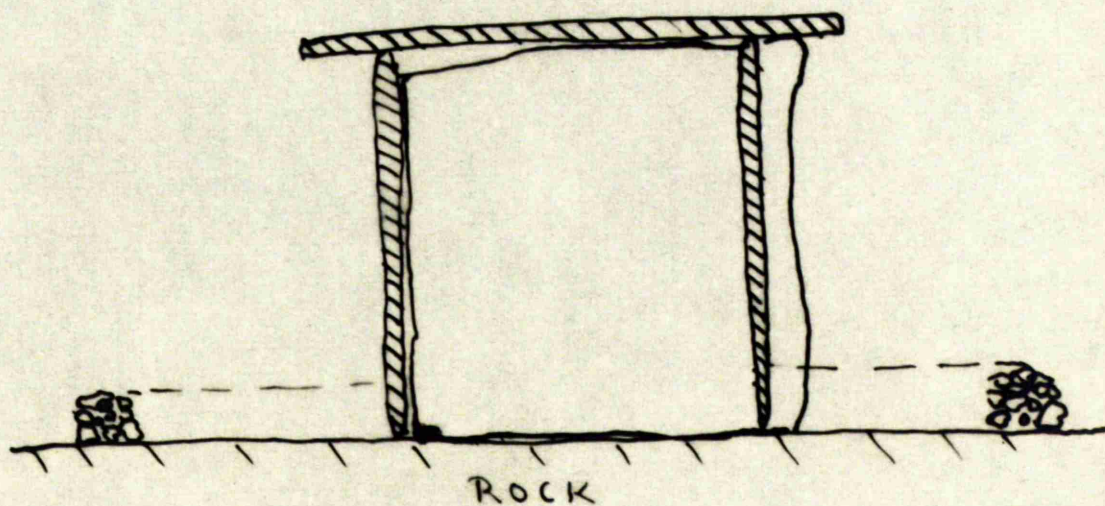
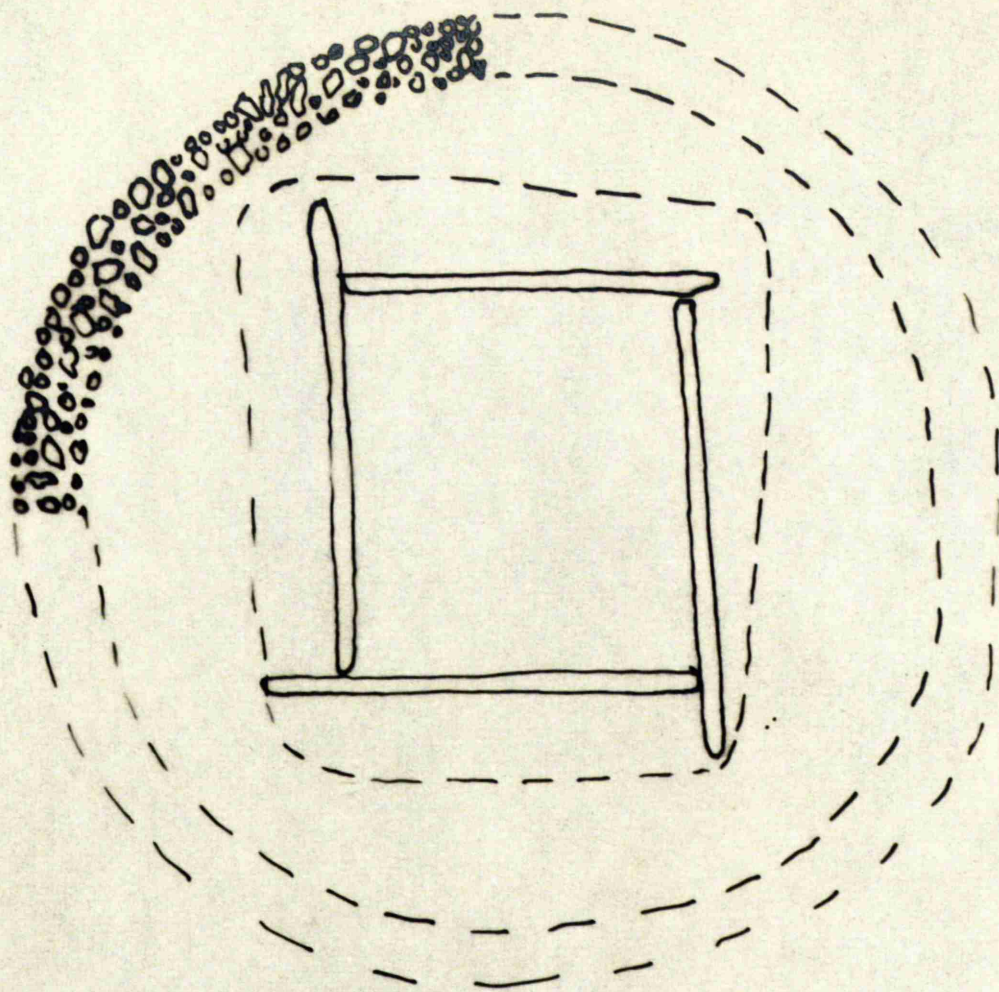
Pls. 17-58 -- Sites.

17. a) Benkal Forest Site 6. Cist graves
of Type A with traces of dry stone
walling.
- b) Benkal Forest Site 6. Cist graves
of Type A.2. (Photos.)



18. Benkal. Stone Cist of Type A.

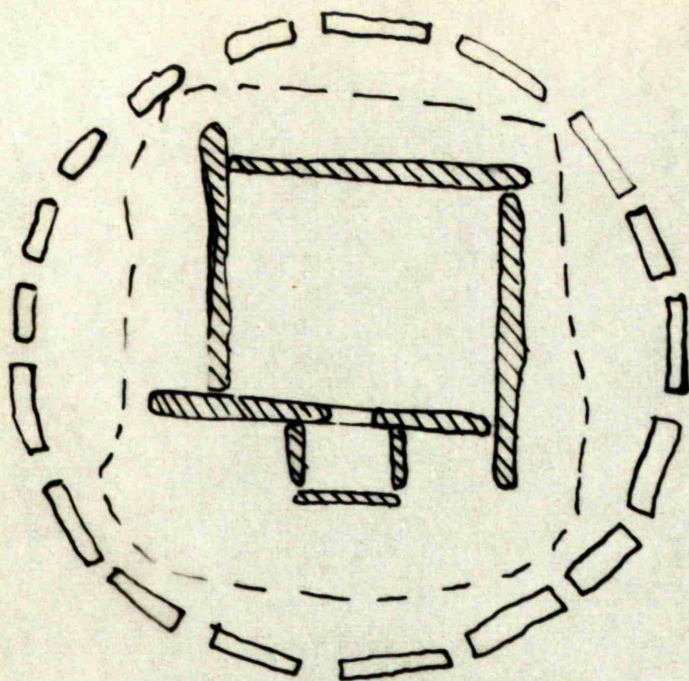
(Drawing.)



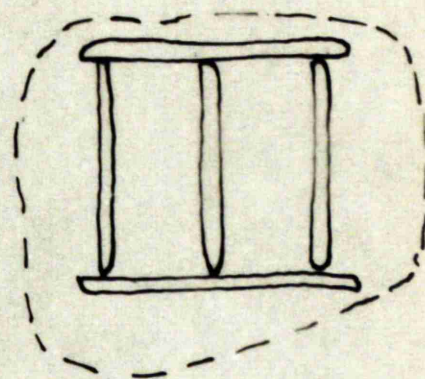
• BENKAL , SITE 6 .

SCALE : $\frac{1}{4}$ " = 1 FT

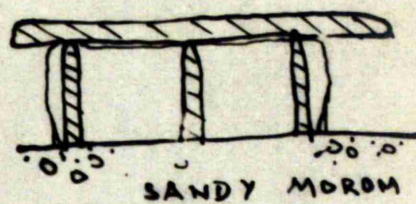
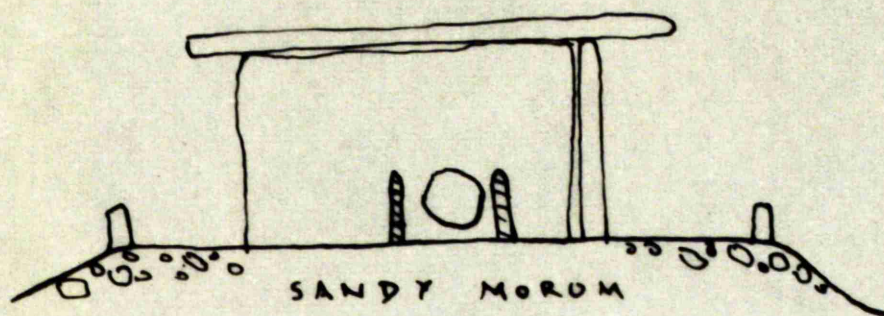
19. 1) Benkal. Cist Circle Grave A.
2) Double Elongated Cist of Type 3.
(Drawings).



1.



2.



SITE 6 BENKAL

SCALE: $\frac{1}{4}$ " = 1 FT

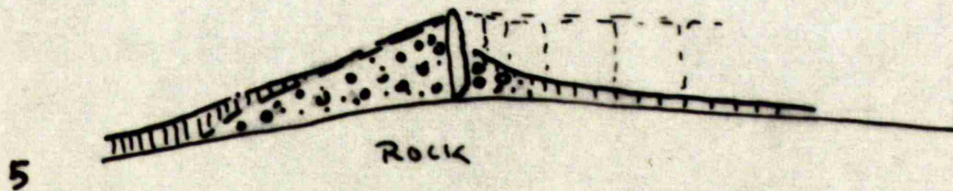
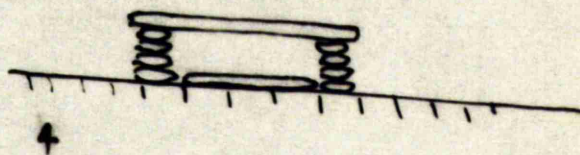
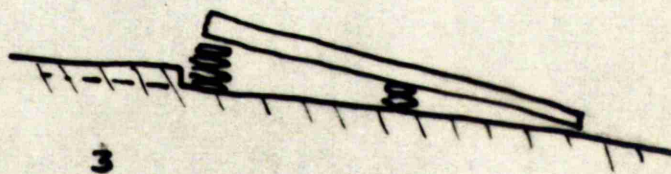
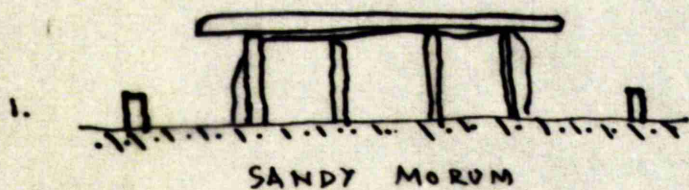
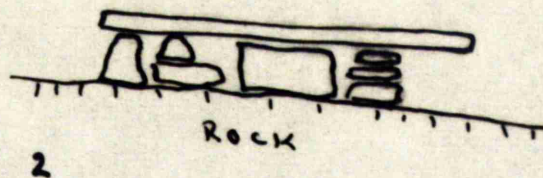
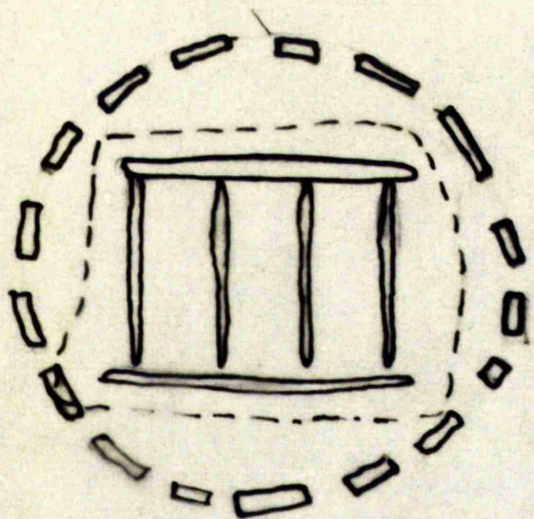
20. a) Bilebhavi, Site No. 73.
 Degenerate Cists of Type A.2.
- b) Bilebhavi, Site No. 73.
 Small Drainage Tank adjoining
 graves. (Photos.)



21. 1 - 3 Benkal, Site No.6. Graves of
Types A3. and A.2.

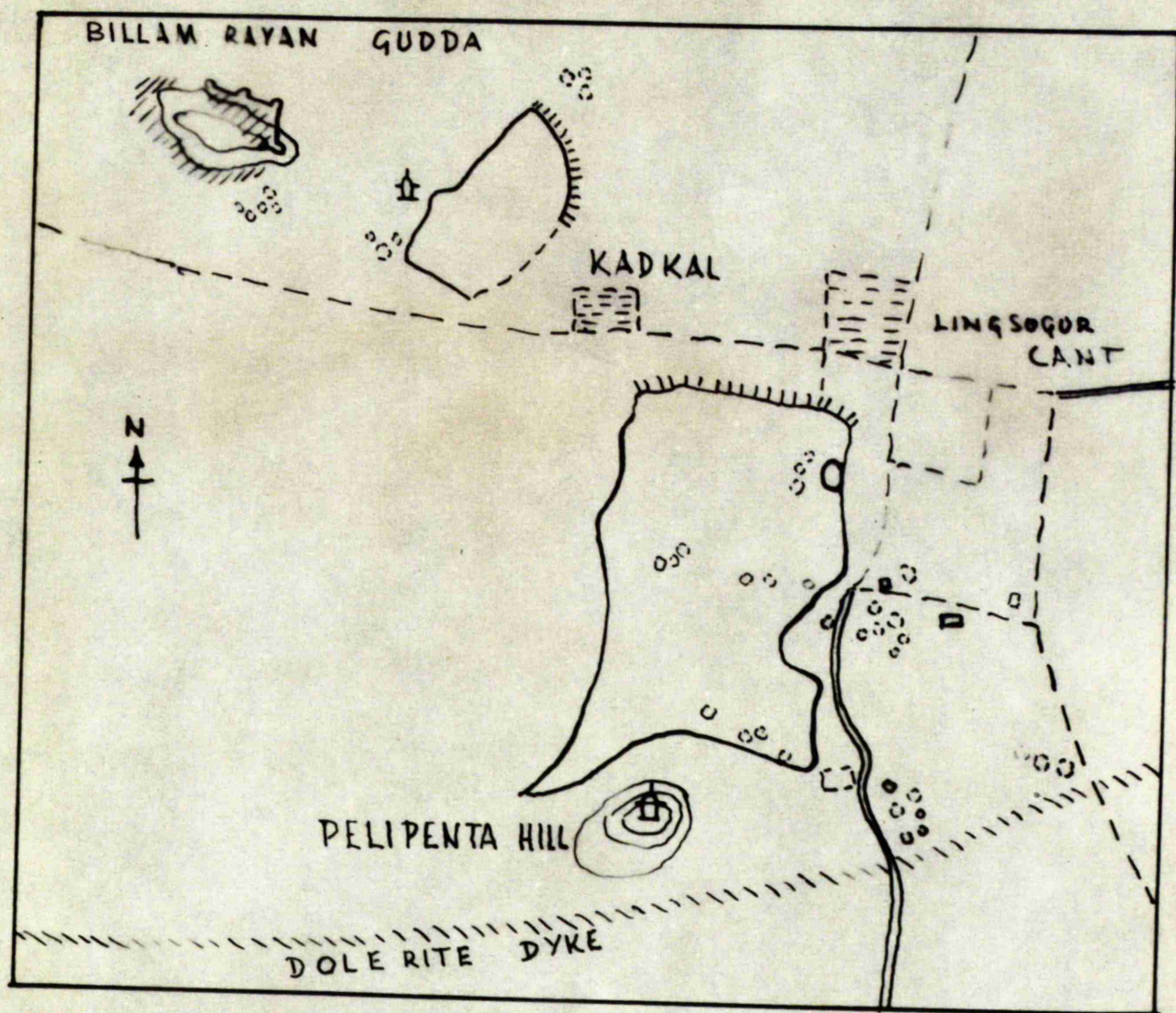
4 Bilebhavi, Site No. 73. Grave of
Type A.2.

5 Section of reconstructed Stone
dam. (Drawings.)



1-3 SITE No 6 BENKAL
 4-5 " " 73 BILE BHAVI
 SCALE : $\frac{1}{8}$ " = 1 FT

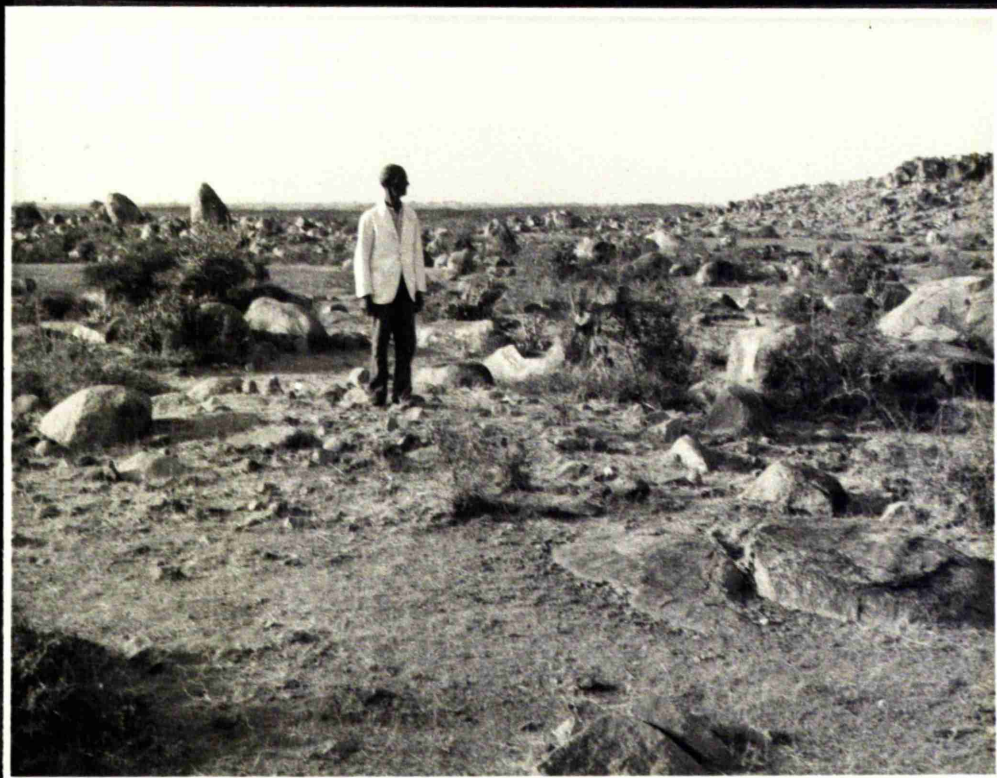
22. Lingsugur and Billamrayan Gudda
(Sites 41 and 7). (Sketch Map).



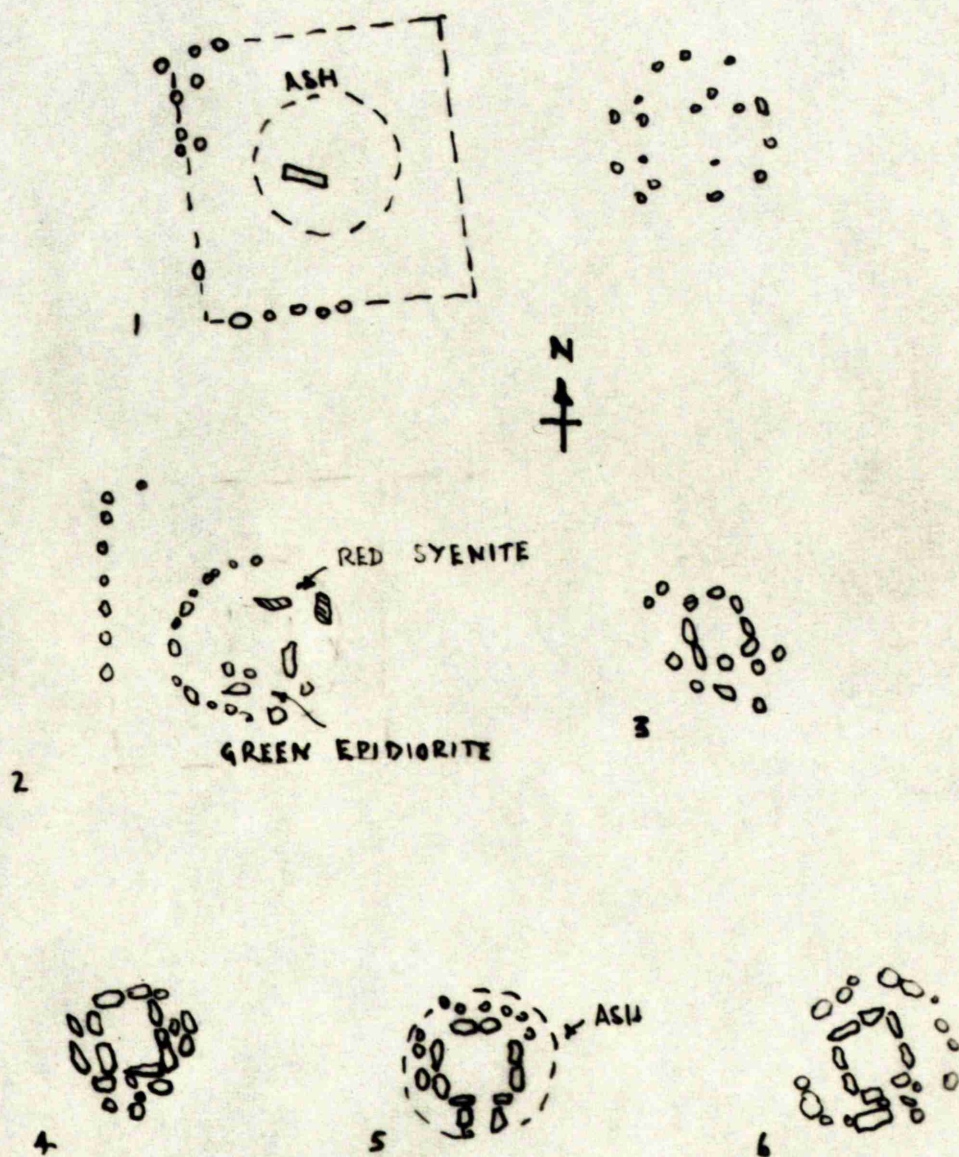
LINGSUGUR & BILLAM RAYAN GUDDA SITES No 41, 7

0 1/2 1 MILE APPROX

23. a) Lingsugur, near Talukdar's Office. Grave of Type A.4. with modern field cairn built above it.
- b) Lingsugur, S.W. of Talukdar's Office. Grave Type B. built on stony waste ground. (Photos.)



24. 1-6 Lingsugur Tank. Graves of
Type A.4. (Drawings after
Munn).



GRAVES - LING SUGAR TANK - AFTER MUNN
SCALE $\frac{1}{16}" = 1 \text{ FT}$

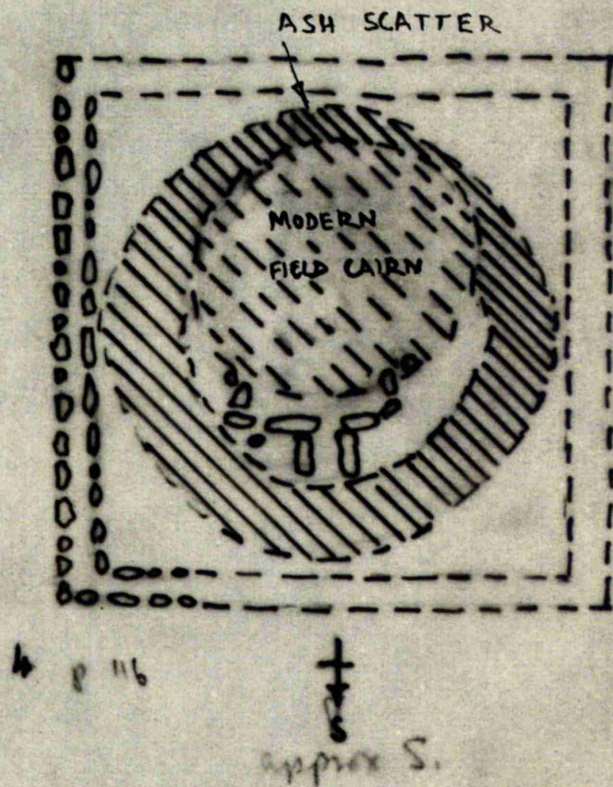
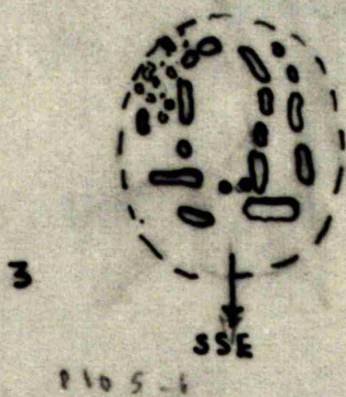
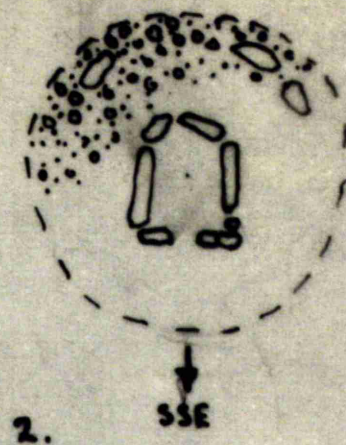
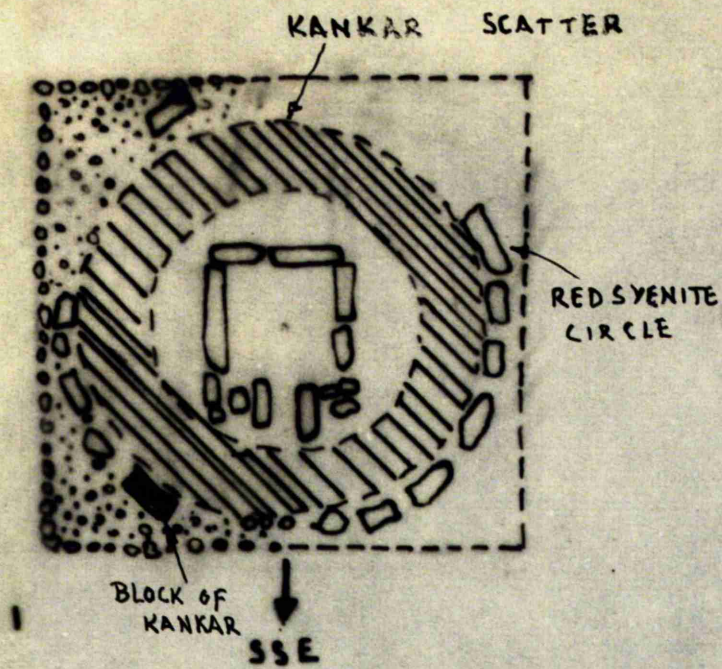
25. a) Maski - Lingsugur Road, Site No. 87.
Grave of Type A.4.

b) Maski - Lingsugur Road, Site No. 87.
Grave of Type A.4. (Photos.)



26. 1 - 3. Maski - Lingsugur Road,
Site No. 87. Graves of Type A.4.

4. Lingsugur, Site No. 41. Grave
of Type A.4. (Drawings.)

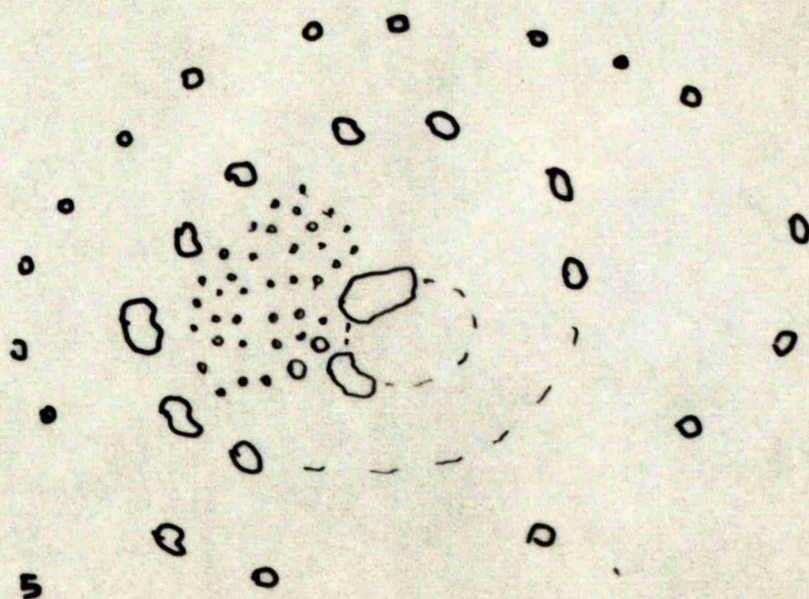
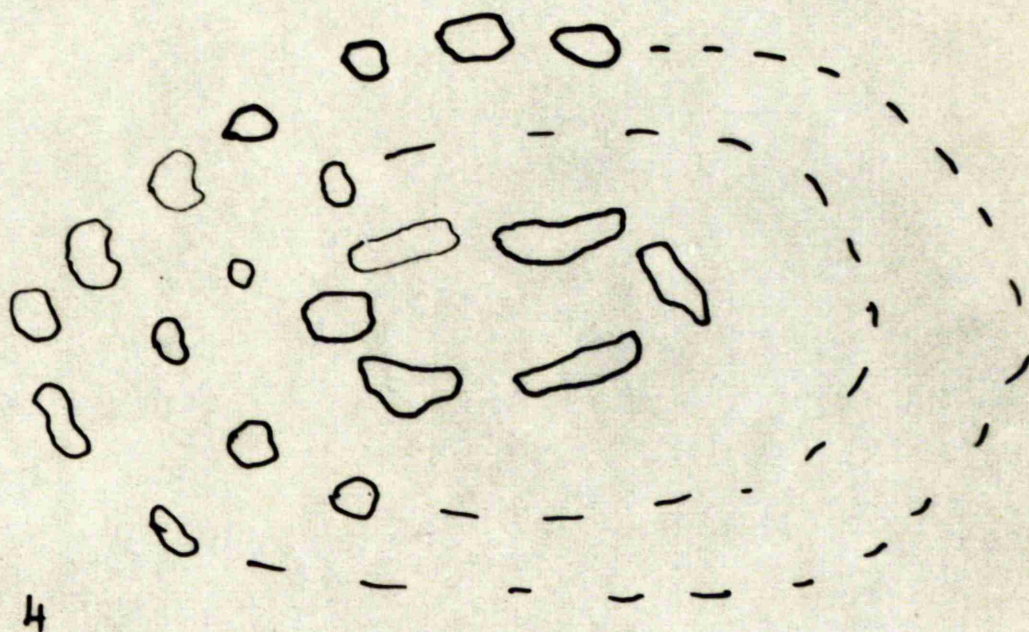
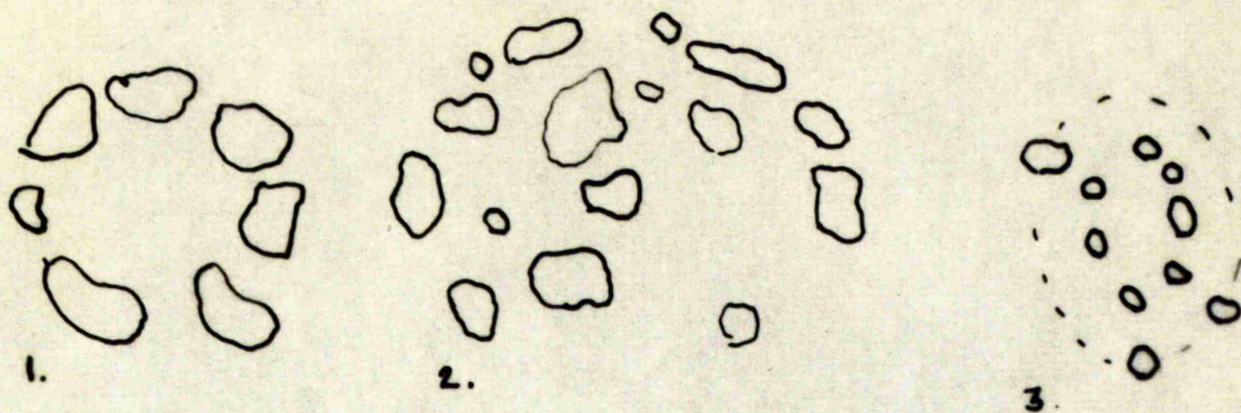


1-3 SITE No 87 MASKI-LINGSUGUR RD

4 SITE No 41 LINGSUGUR

SCALE: 1/16" = 1 FT

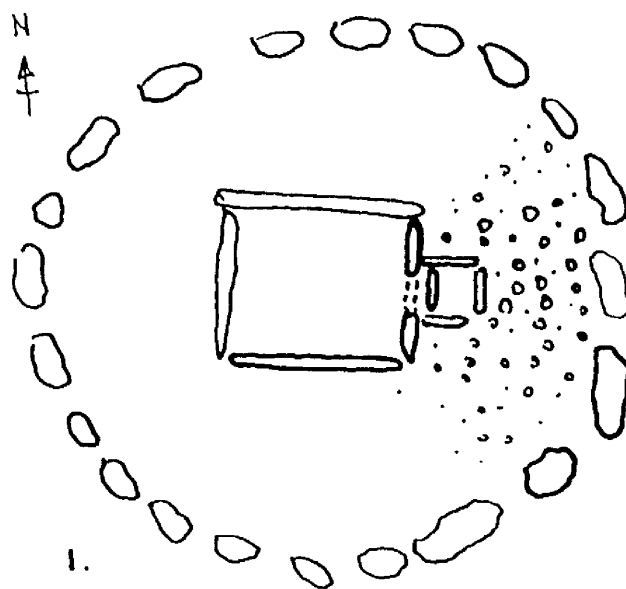
27. 1-5. Rajula banda, Site No.86.
Irregular Cairn Circle
Graves of Type B.2.
(Drawings.)



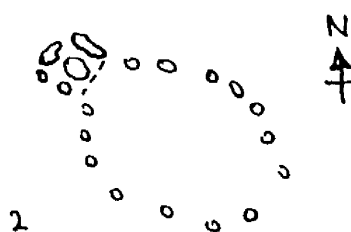
RAJUL BANDA

1-4 $\frac{1}{8}'' = 1 \text{ FOOT.}$ 5 $\frac{1}{16}'' = 1 \text{ FT.}$

28. 1) Shivapur, North, Site No. 93,
Cist Grave of Type A.1.
- 2) Hankunti Site No. 25. Grave
of Type B.2. (Drawings.)



1.



2

1. SITE No 93, SHIVAPUR N.

SCALE 1/8" = 1 FT

2. " " 25. HANKUNTI.

" " "

29. a) Shivapur, North, Site No. 93.
Cist Grave of Type A.1.
- b) Kakulwaram, Site No. 82.
Circle Grave of Type B.
(Photos.)



30. Gadwal - Latipur Track, Sites 15 and 80.

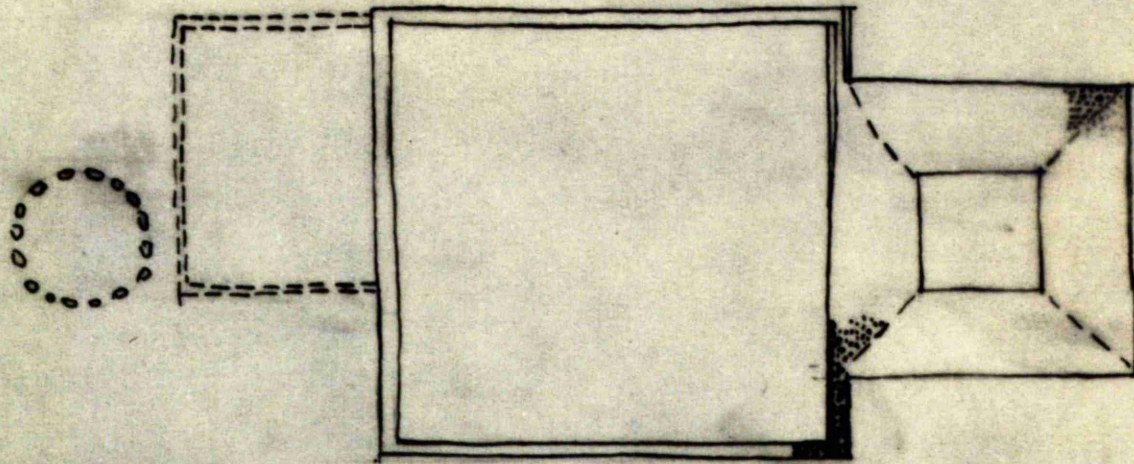
(Sketch Map)

31. a) Gadwal - Latipur Trace, Site 15.
Building G.II wall foundations
from North.
- b) Potla Pahad, Site 80. Showing
Medieval Stone Circle (? grave)
and shrine. (Photos.)



32. Site 15 - Plan of Building G.II.

(Drawing.)

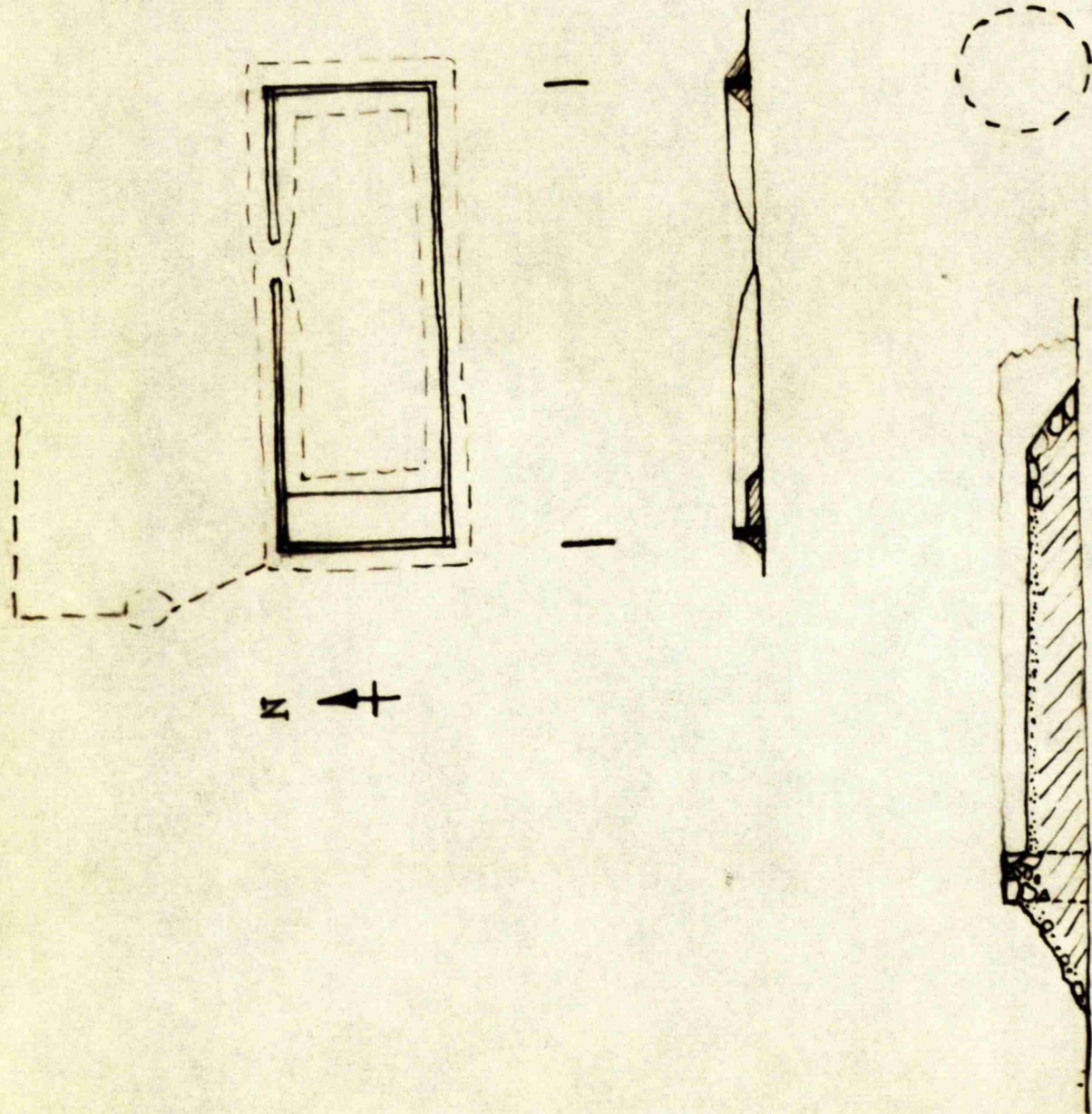


SITE 15 GAD VAL - LATIPUR TRACK

SCALE: 1/32" = 1 FT

33. Site 15 - Plan of Building G.III.

(Drawing.)



SITE 15, GADVAL-LATIPUR TRACK

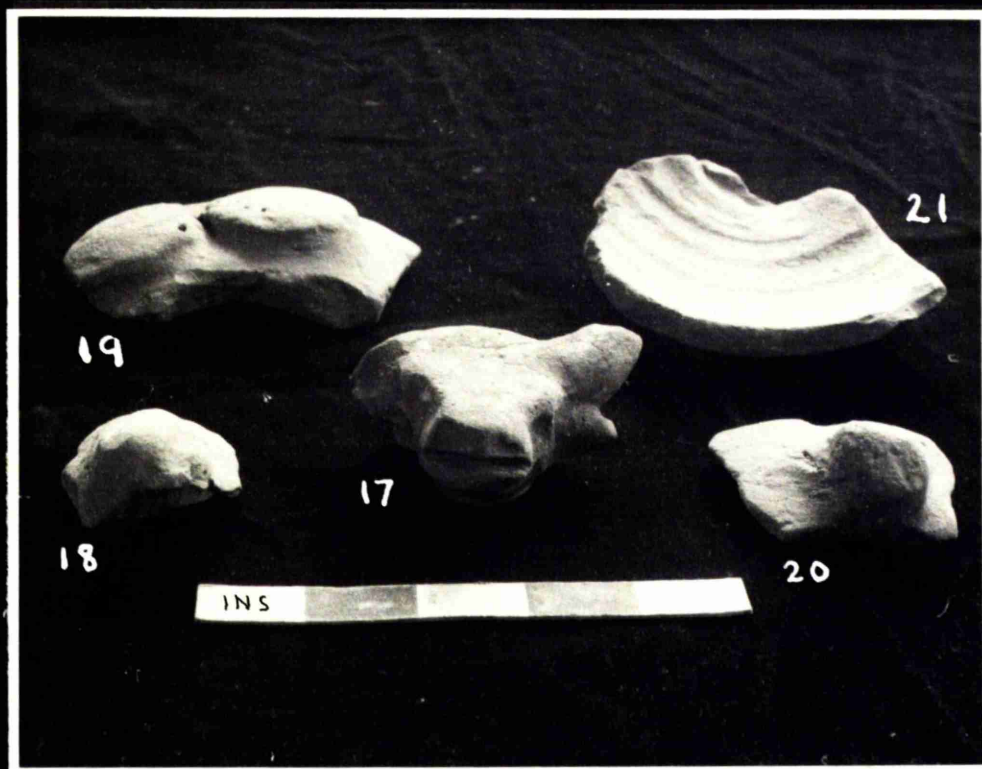
SCALE: $1/32" = 1 \text{ FT}$

34. a) Gadwal - Darur Road. Site No. 75.
Circle Graves of Type B.
- b) Darur - E. of Site No. 11.
Circle Graves of Type B.
(Photos.)



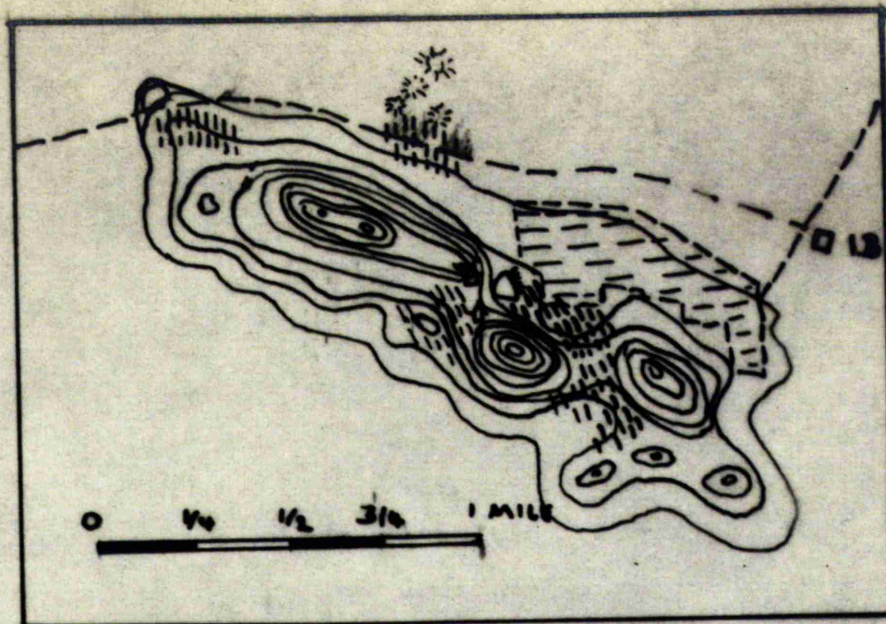
Pl. 35.

- a). Hunkunti, Site No.25.
Cairn Grave, Type C.
 - b). Hunkunti, Site No. 25.
Fragments of animal
formed urns.(Nos.25.17-25.21).
- 17. Head of Buffalo of coarse B.3. ware with traces of red slip: hand-modelled and tool finished. The horns are missing, one being broken before the application of slip and firing. The following sherds are also from the same provenance and appear to be parts of urns similar to that discovered at this site by Foote (see Ch. III, Site 25).
 - 18. 'Knob' or 'foot' of similar ware (B.3.)
 - 19. Two short feet from the belly of an urn (B.3.)
 - 20. Another knob or foot. (B.3.)
 - 21. A sherd of similar ware (B.3.)



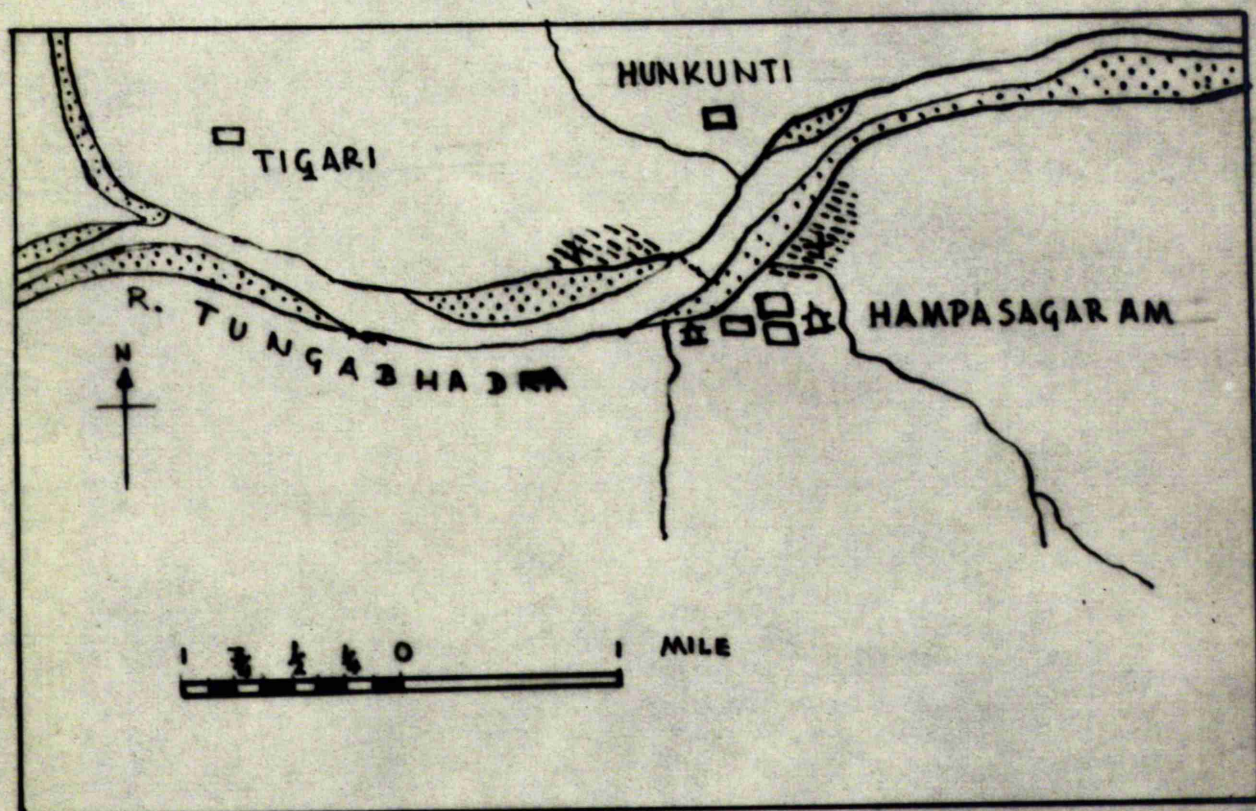
36. a) Manvi, Site No. 86.
(Sketch Plan).

b) Hunkunti, showing relationship
to Hampi Sagar.
(Sketch Plan).



MANVI

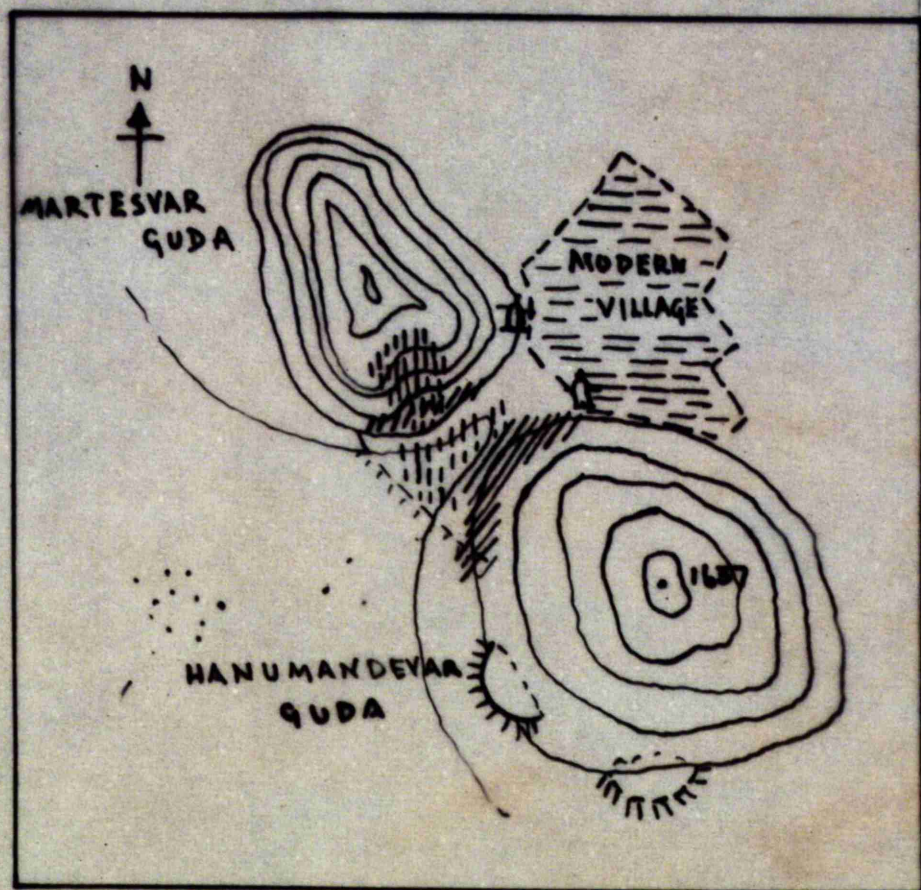
SITES No 86 & 46



HUNKUNTI

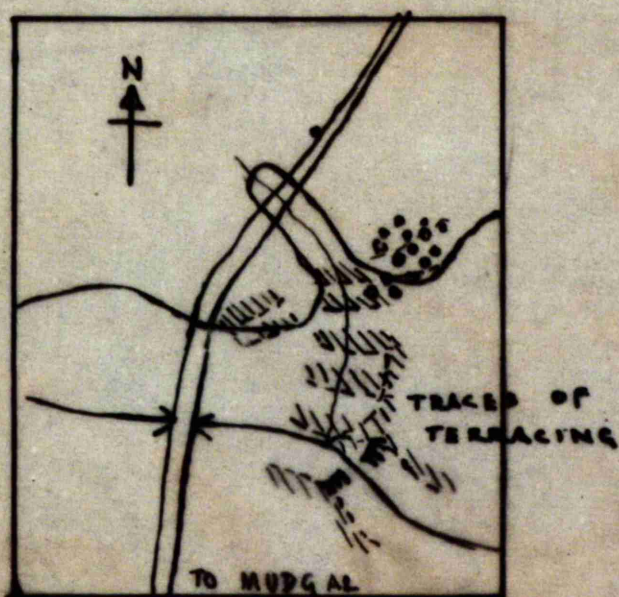
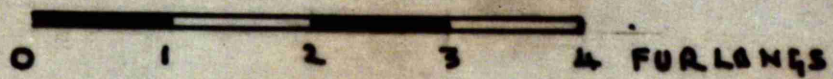
SITE No 26

37. a) Kallur (Site No. 30)
(Sketch Plan).
- b) Site No. 49.
(Sketch Plan).

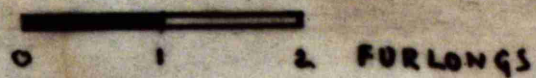


KALLUR

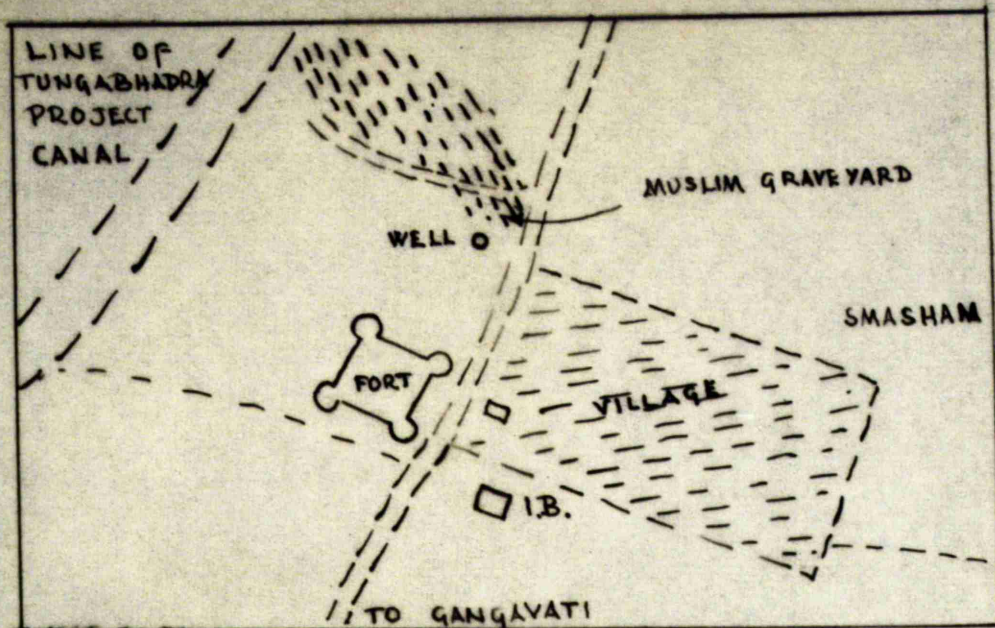
SITE No 30



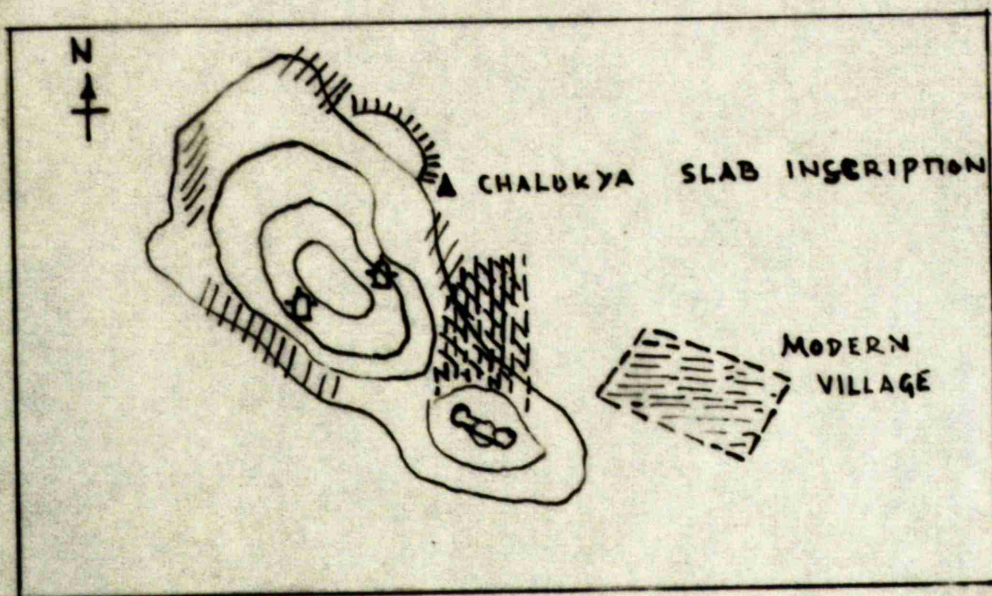
SITE NO 49



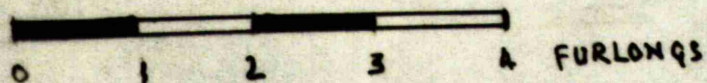
38. a) Karatgi (Site No. 32)
(Sketch Plan)
- b) Rodalkunda (Site No. 57)
(Sketch Plan)



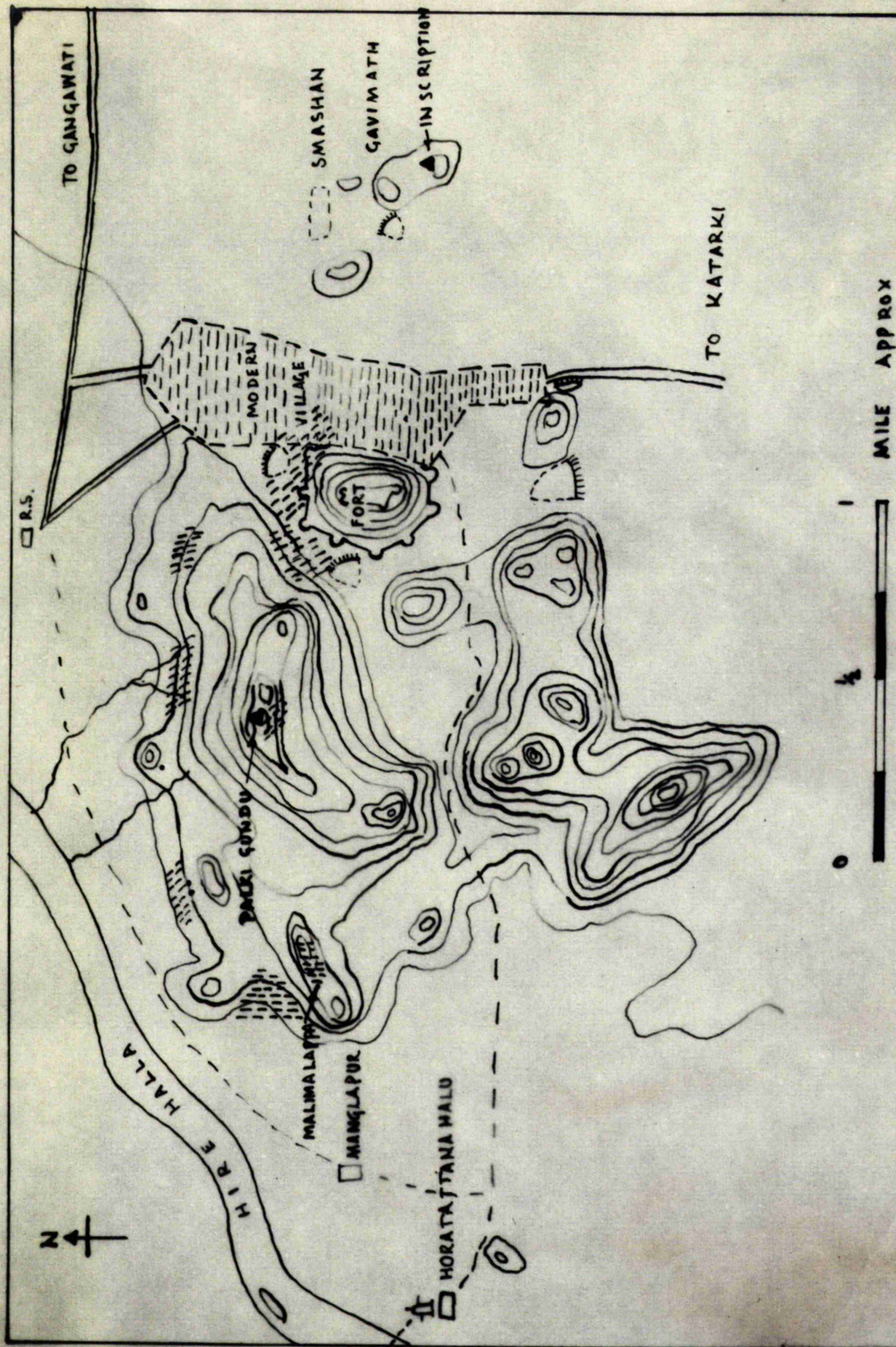
KARATQI



RODALKUNDA



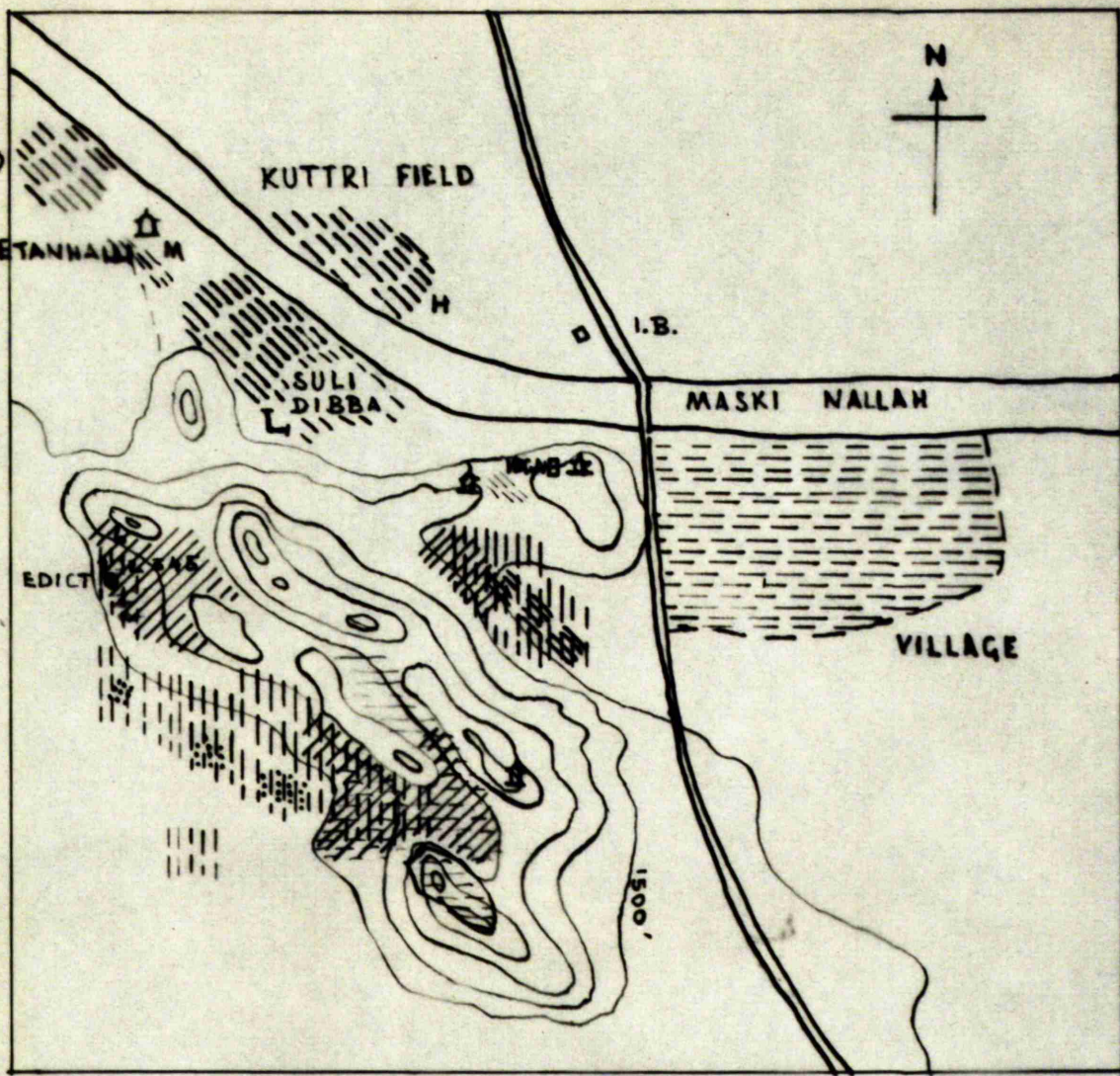
39. Kopbal, (Site No. 36)
(Sketch Plan)



KOPBAL

SITE No 36

40. Maski (Site No. 47)
(Sketch Plan)

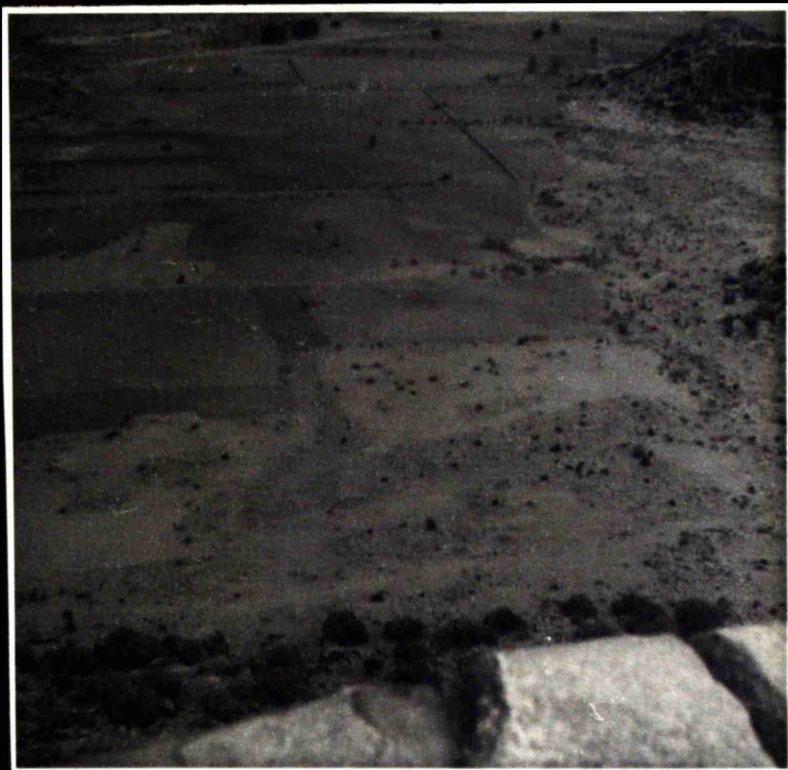


MASKI

SITE No 47



41. a) Maski: View of Alignments,
 W. of Hill.
- b) Pottery Cists from Maski Museum.
- (Photos.)

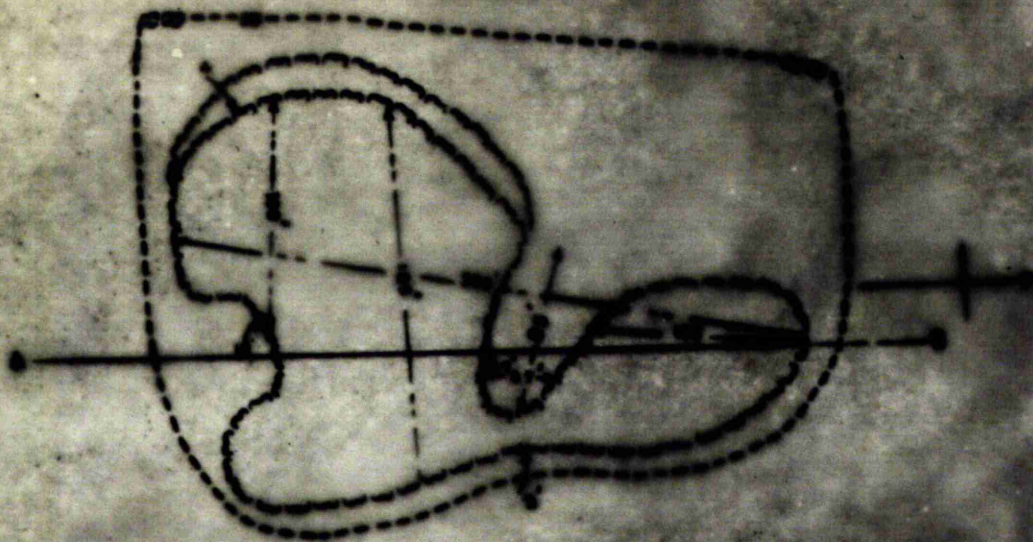


42. a) Gaudur (Site No. 16) Plan of
Ash Mound.
- b) Wendall1 (Site No. 67) Plan of
Ash Mound.

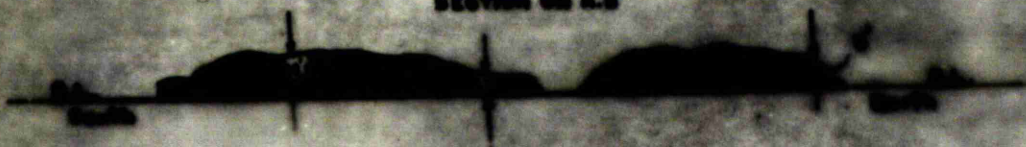
(Drawings after Munn)

MACHER (SANDER) ASH-MOUND

SCALE 100 FEET = 1 INCH

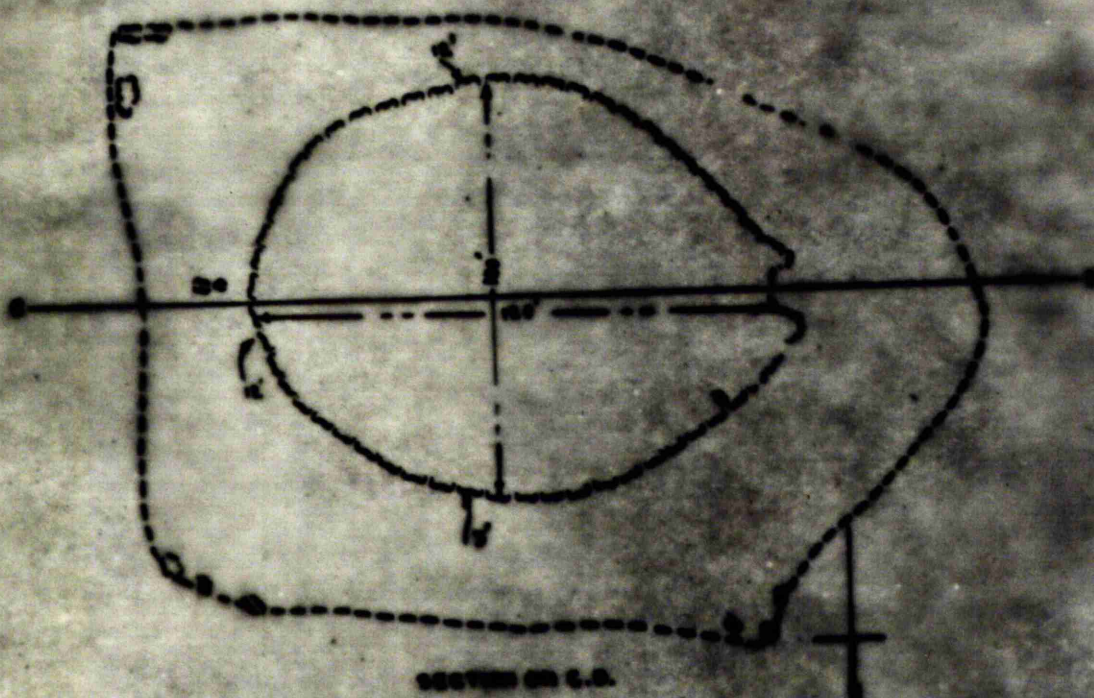


SECTION ON A-B



WANDALLI ASH-MOUND

SCALE 100 FEET = 1 INCH



SECTION ON C-D



43. Gaudur Ash Mound (Site No. 16).

(Sketch Section, after description and photo by Munn)

MOUNDS

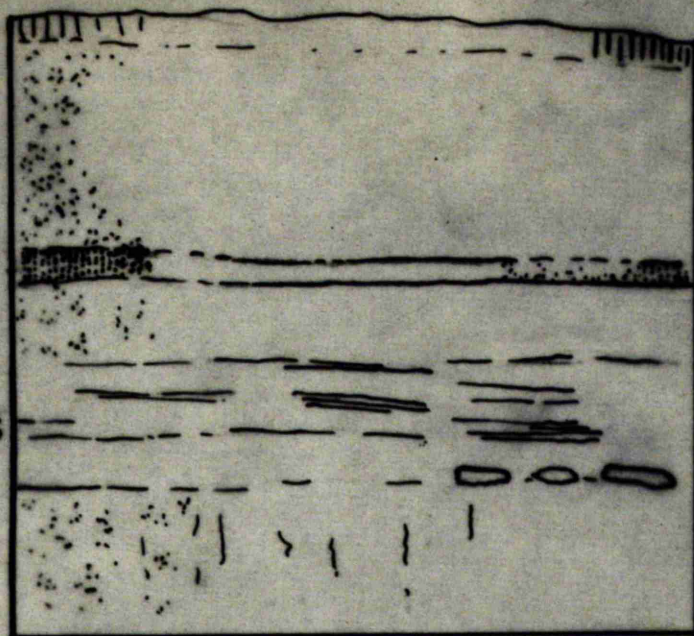
23" SCORIACEOUS
MATERIAL

3" PINKY BROWN SAND

12" WHITE ASH

12" 1" THICK LAYERED
WITH CHARCOAL AND SHERD;
IMBEDDED STONES

30" WHITE LOOSE
ASHY LAYERS; IMBEDDED
STONES

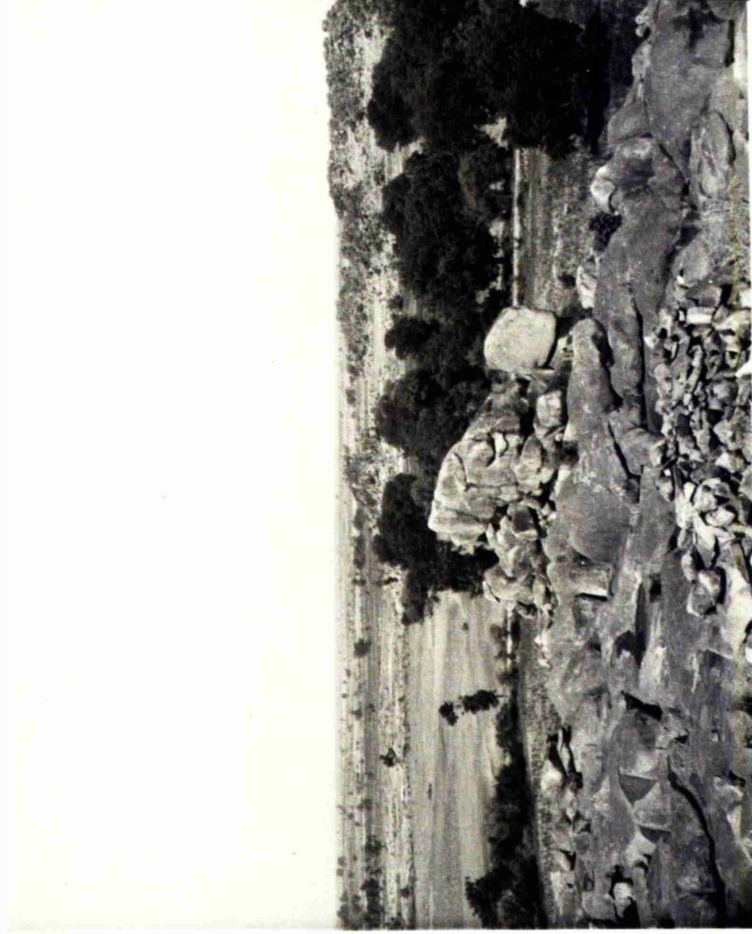
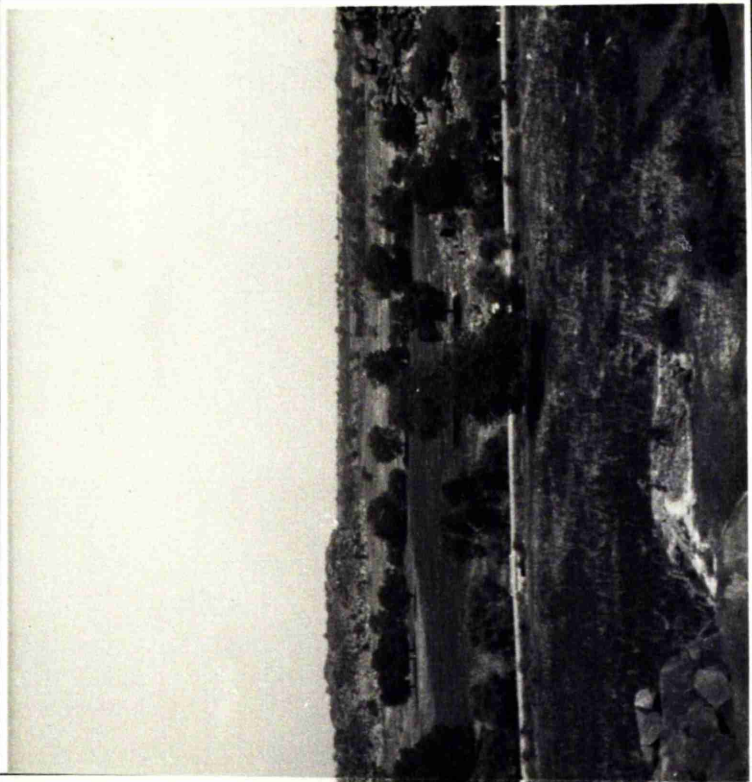


MOUND CONTINUES BELOW

SKETCH RECONSTRUCTING SECTION OF GAUDUR
ASH MOUND (AFTER MUNN) ~ NOT TO SCALE

44. Piklihal, Site No. 91. General View
from East.

(Photo.)



45. Piklihal, Site No. 91.

(Sketch Plan)

46. a) Piklihal, Site No. 91.
Area H., looking East.
- b) Piklihal, Site No. 91.
Area D., looking towards A,
Cave on Right.

(Photos.)

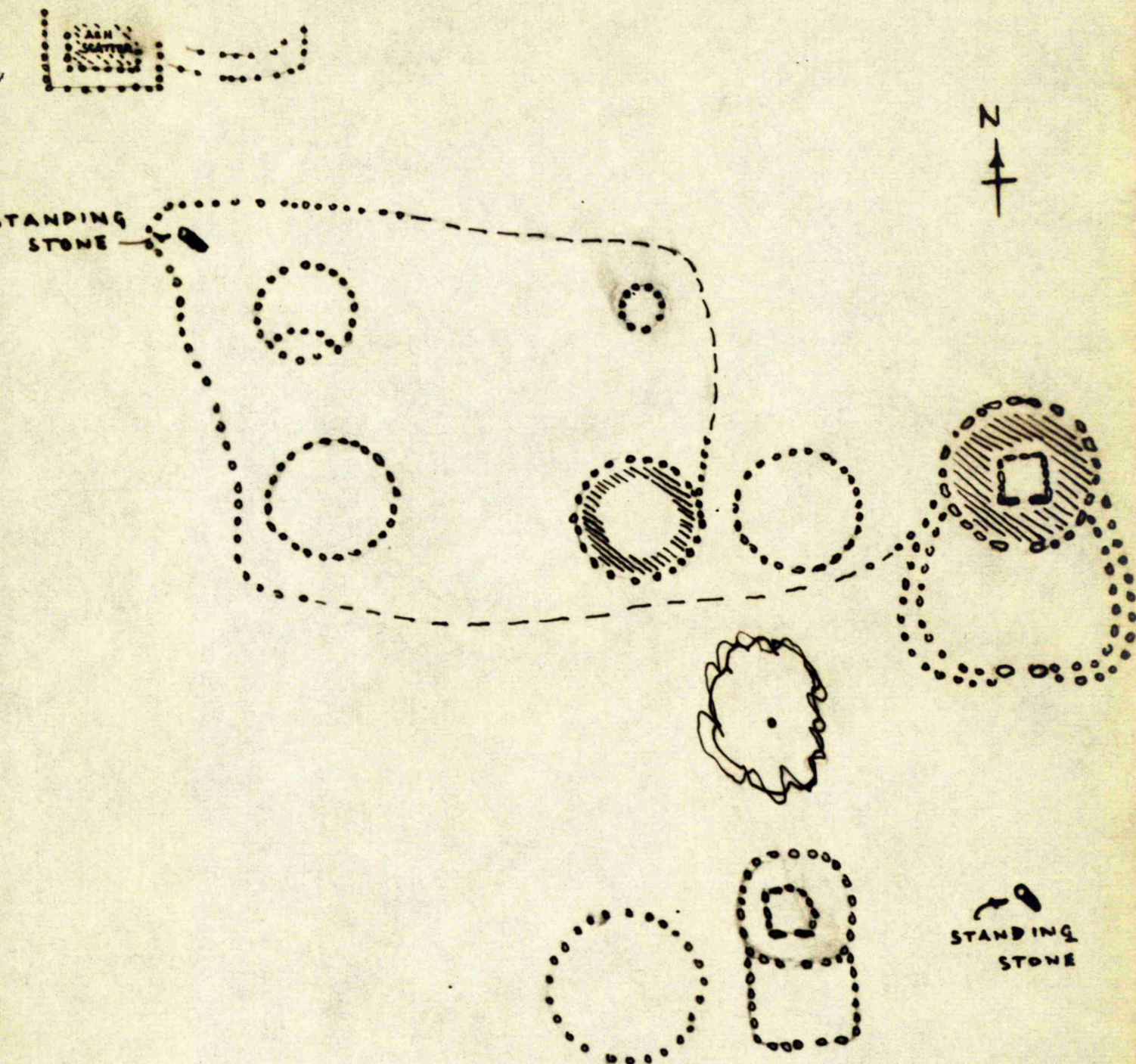


47. a) Piklihal, Site No. 91.
 Area D., looking South.
- b) Piklihal, Site No. 91.
 Grave of Type A.4. in Area
 G.II.
 (Photos.)



48. Piklihal, Site No. 91.
Graves in Area G.II.

(Drawing.)



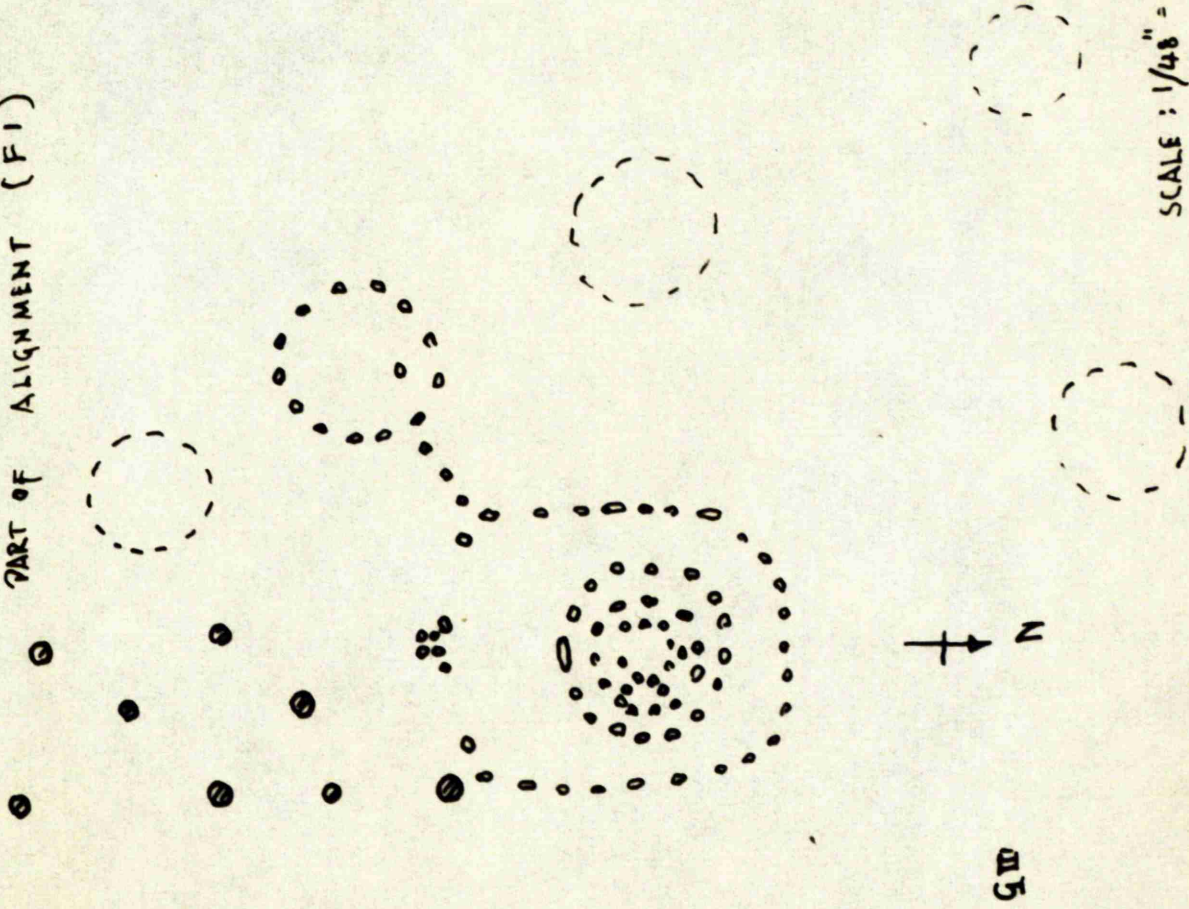
0 10 20 30 40 50 60 70 80 90 100 ft

PIKLIHAL NR MUDGAL

AREA GII

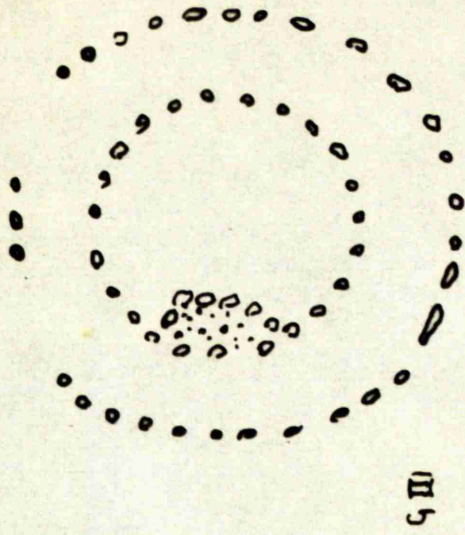
49. Piklihal, Site No. 91.
Graves in Area G.III.
(Drawing.)

PART OF ALIGNMENT (F1)

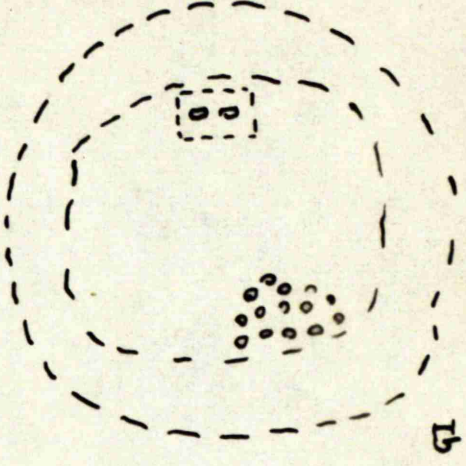


SCALE: 1/48" = 1 FT

PIKLIAL, NR MUDGAL



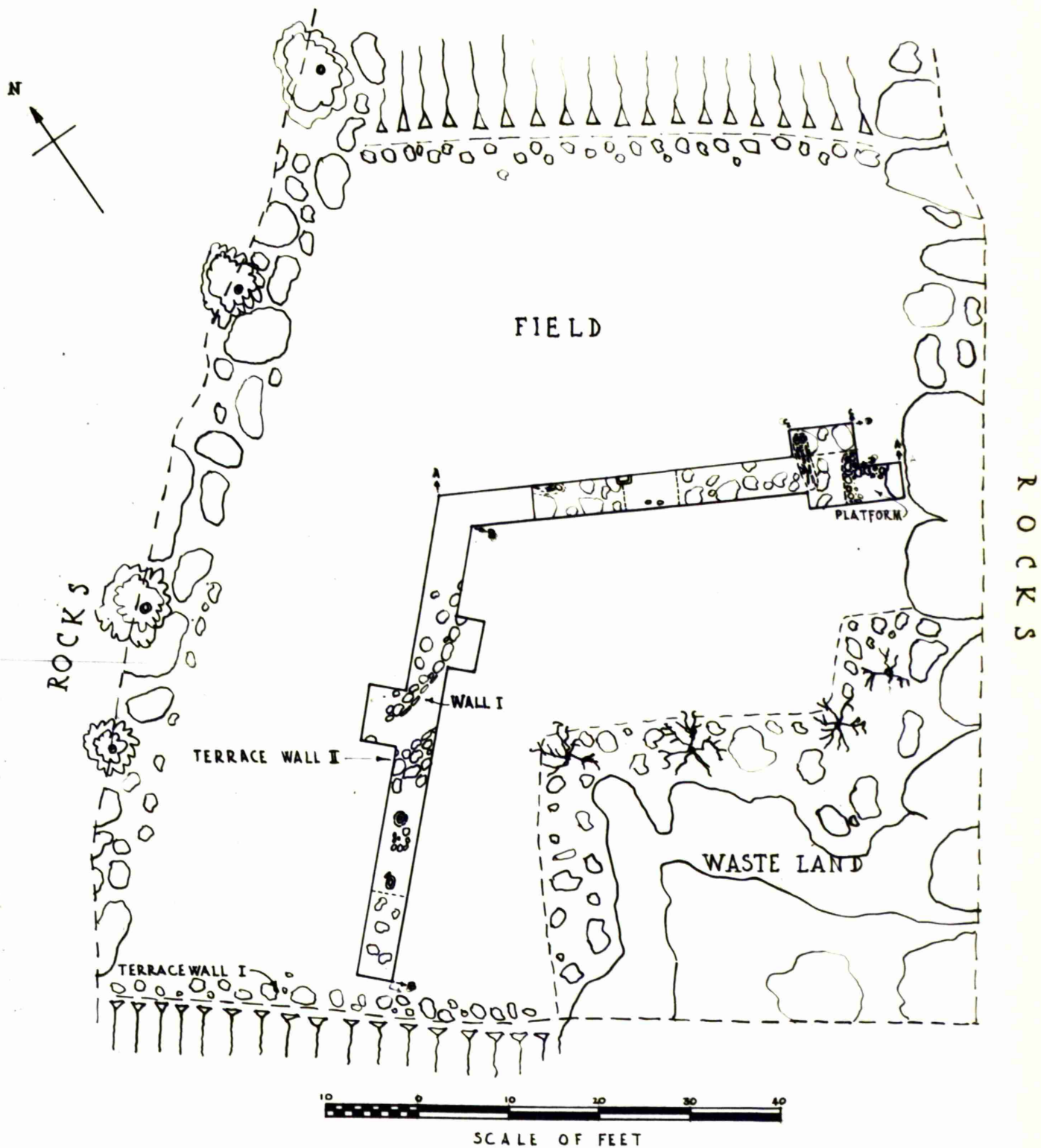
N



SCALE 1/24" = 1 FT

50. Piklihal, Site VII.

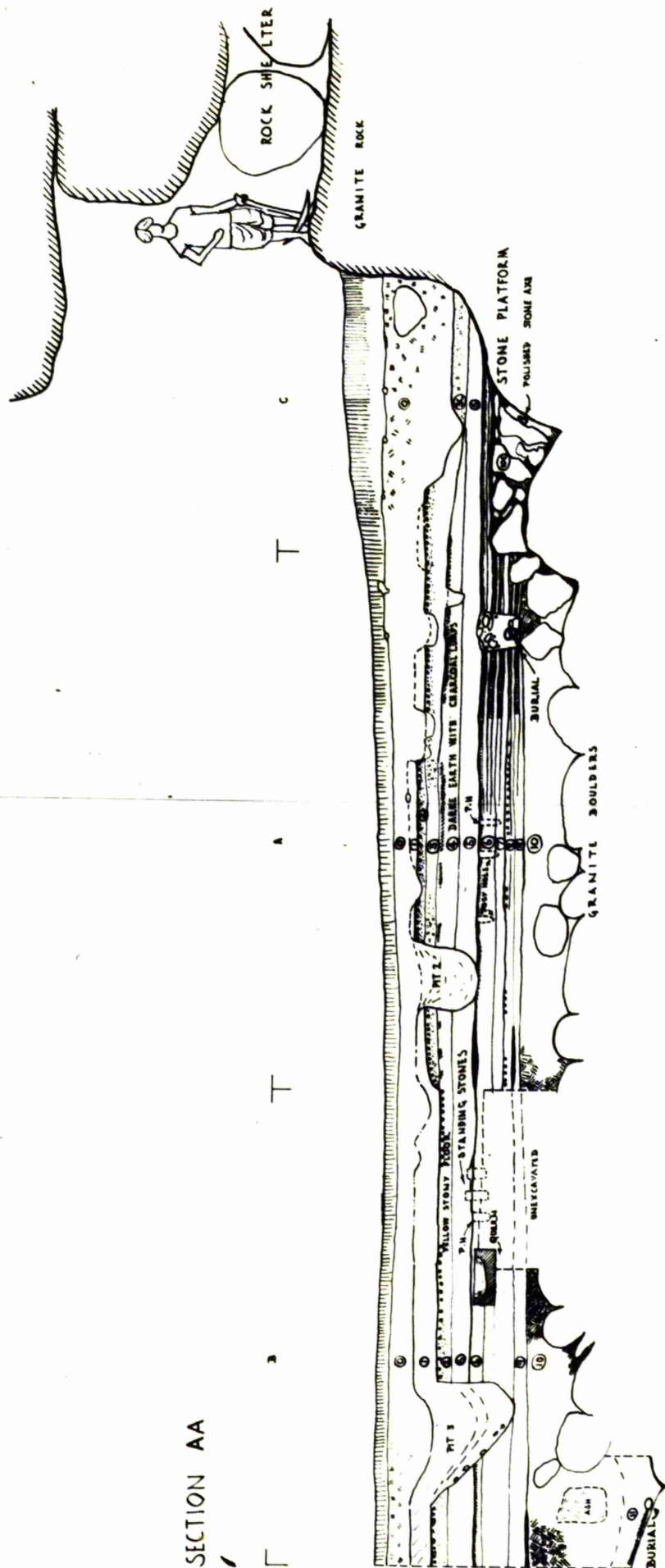
(Plan)



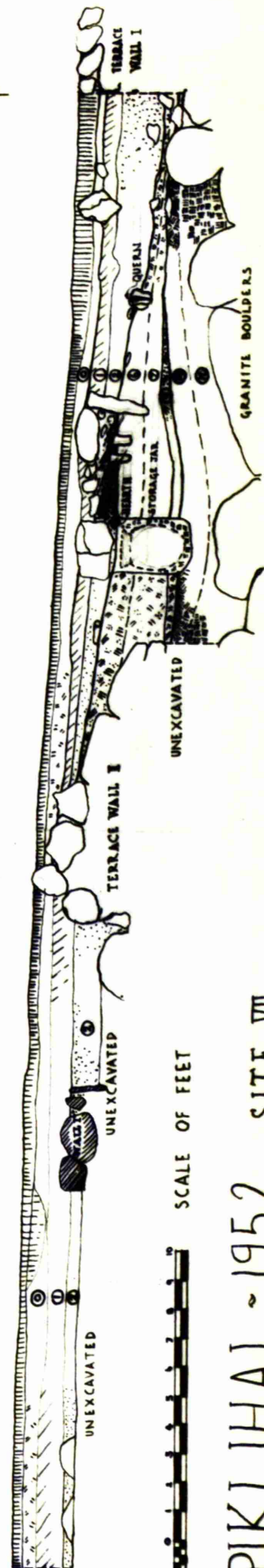
PIKLIHAL ~ 1952

SITE VII

51. Piklihal, Site VII.
Sections A and B.



SECTION AA



SECTION BB



SCALE OF FEET

PIKLIHAL - 1952 SITE VII

52. Piklihal, Site VII.
Panorama.

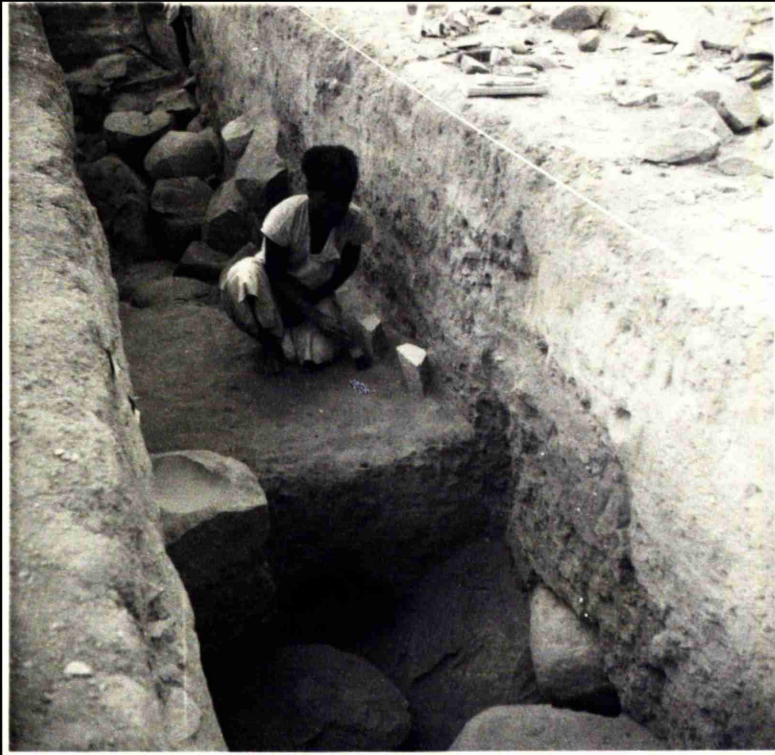
(Photo.)



53. a) Piklihal, Site VIIA.

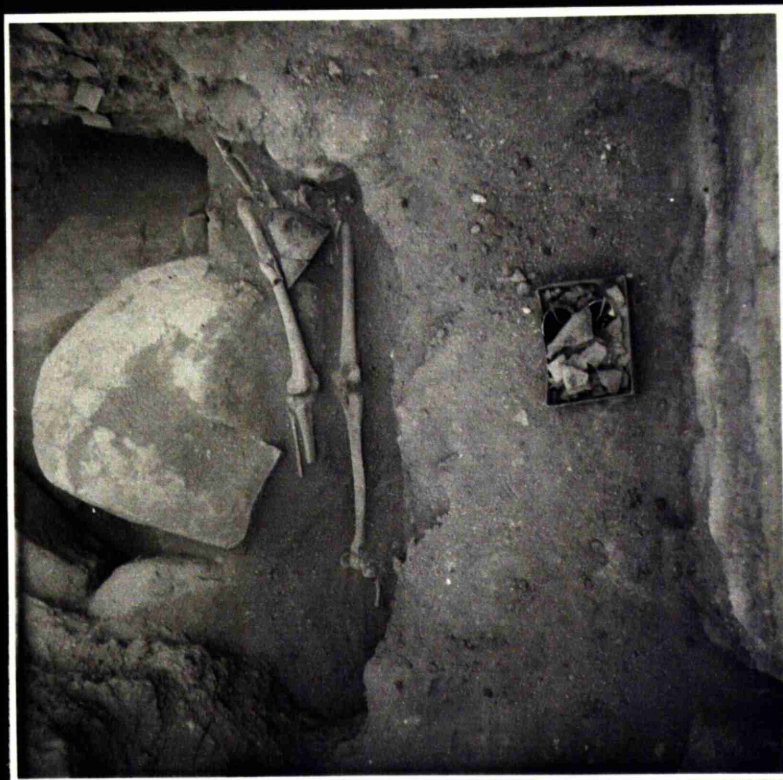
b) Piklihal, Site VIID.

(Photos.)



54. a) and b) Piklihal, Site VIIC.
Burial in (6)

(Photos.)



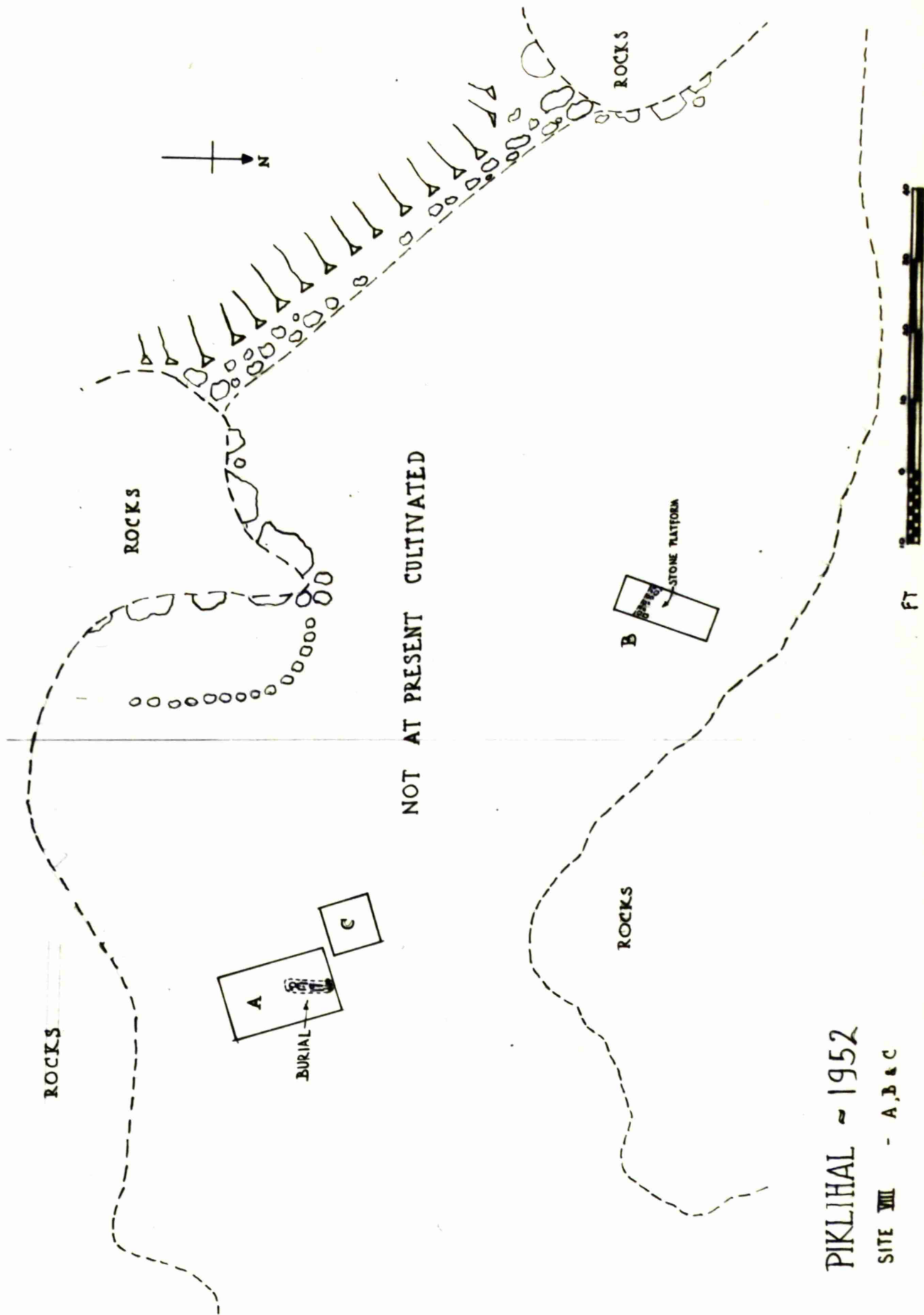
55. a) Piklihal, Site VIIC.
Burial in (6) Detail
of Skull.
- b) Piklihal, Site VIIB.
Burial in (10).

(Photos.)

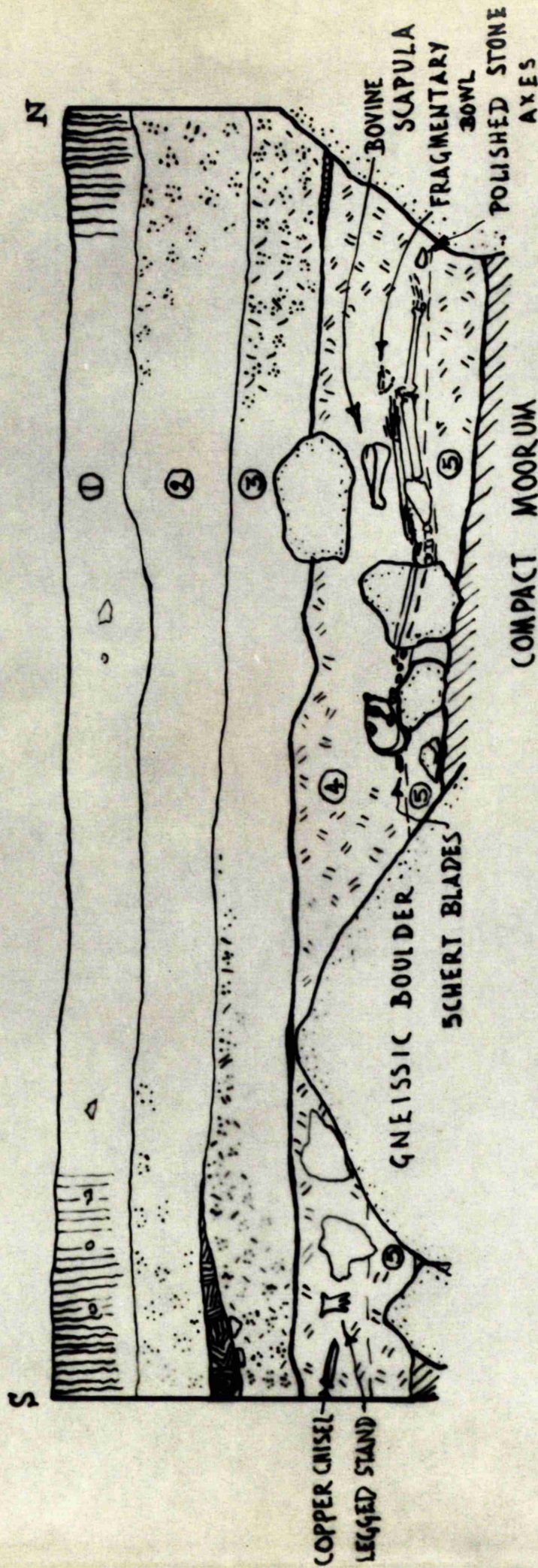


56. Piklihal, Site VIII.

(Plan).

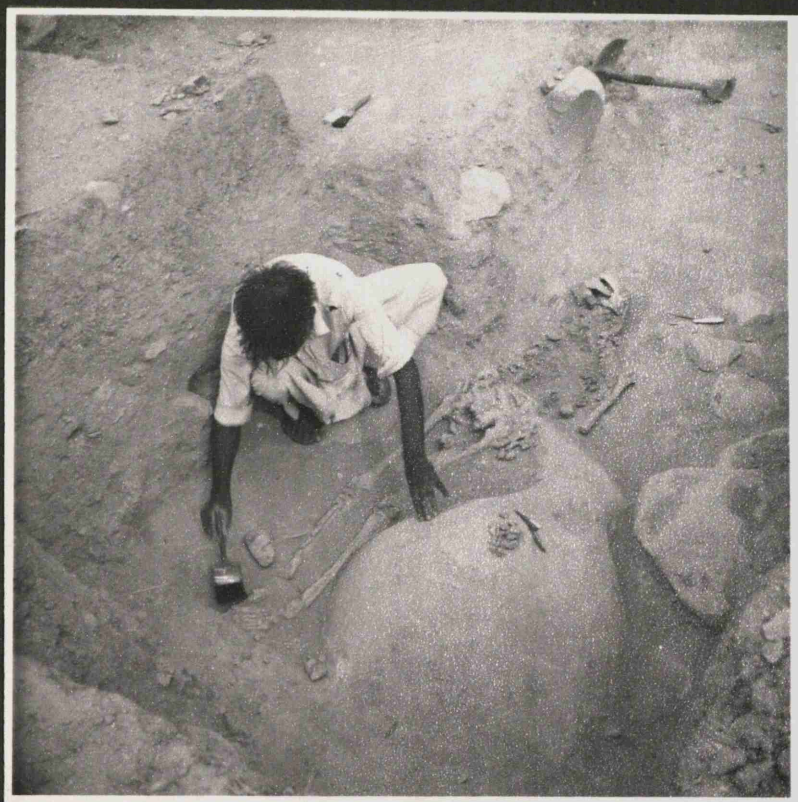


57. Piklihal, Site VIIIA.
(Section).



PIKLIHAL. SITE VIII A ~ WEST SECTION

58. a) Piklihal, Site VIIIA.
Burial with Stone Axes
in situ at foot, and
Blades by Skull.
- b) Piklihal Pottery and
terracottas from
excavation and surface
collections.

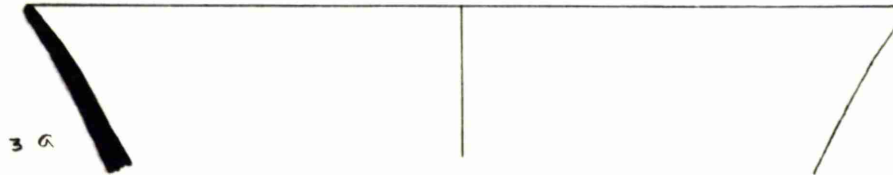
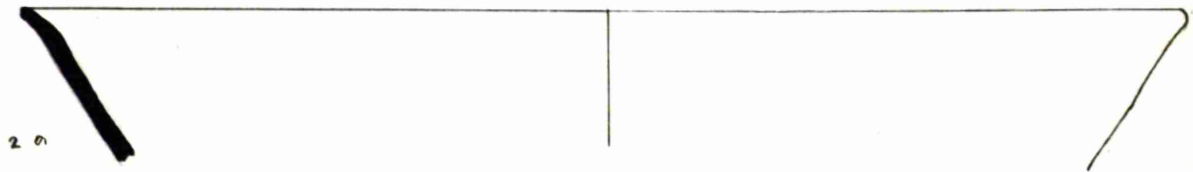
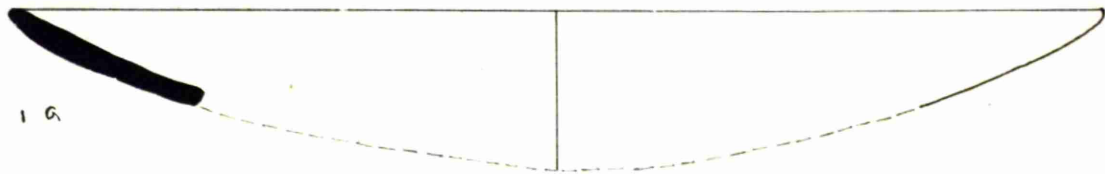


Pls. 59-62 - Pottery from Piklihal
Excavations and Surface Collections
Classified according to ware.

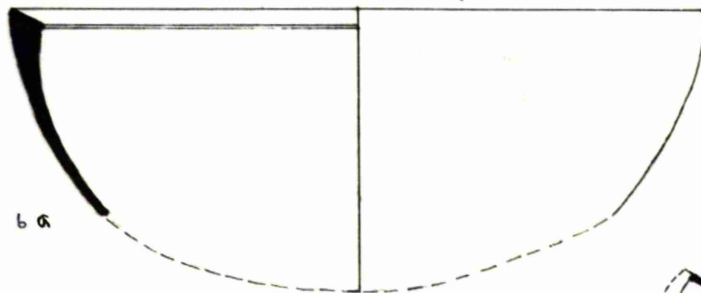
Pl. 59. Site 91. Piklihal (Excavations).

A.1. ware	14a	(Site VIIA, Layer(10).		
A.2. ware	1a	(" VIIIB, Ext. Layer 3)		
	2a	(" VIIA, Layer 10)		
	3a	(" VIIIA " 4)		
	4a	(" " " ")		
	8a	(" " " ")		
A.3. "	5a	(" " " ")		
	6a	(" VIIA " 10)		
	7a	(" VIIIA " 4)		
	11a	(" VIIA " 10)		
	12a	(" I " 8)		
	13a	(" VIIIA " 4)		
	15a	(" VIIA " 5)		
A.5. "	9a	(" VIA " 8)		
	10a	(" " " ")		

A



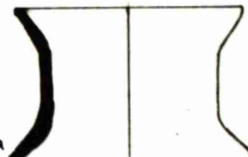
5a



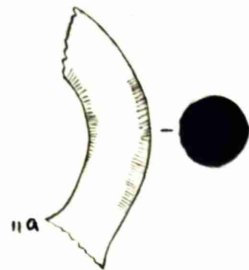
7a



10a



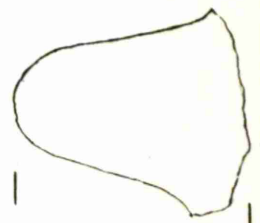
8a



11a



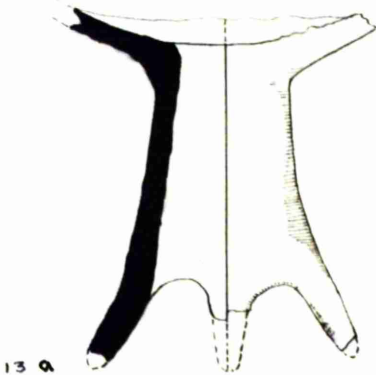
9a



14a



12a



13a



15a



SCALE OF INCHES

60. Site 91. Piklihal (Surface Collection)

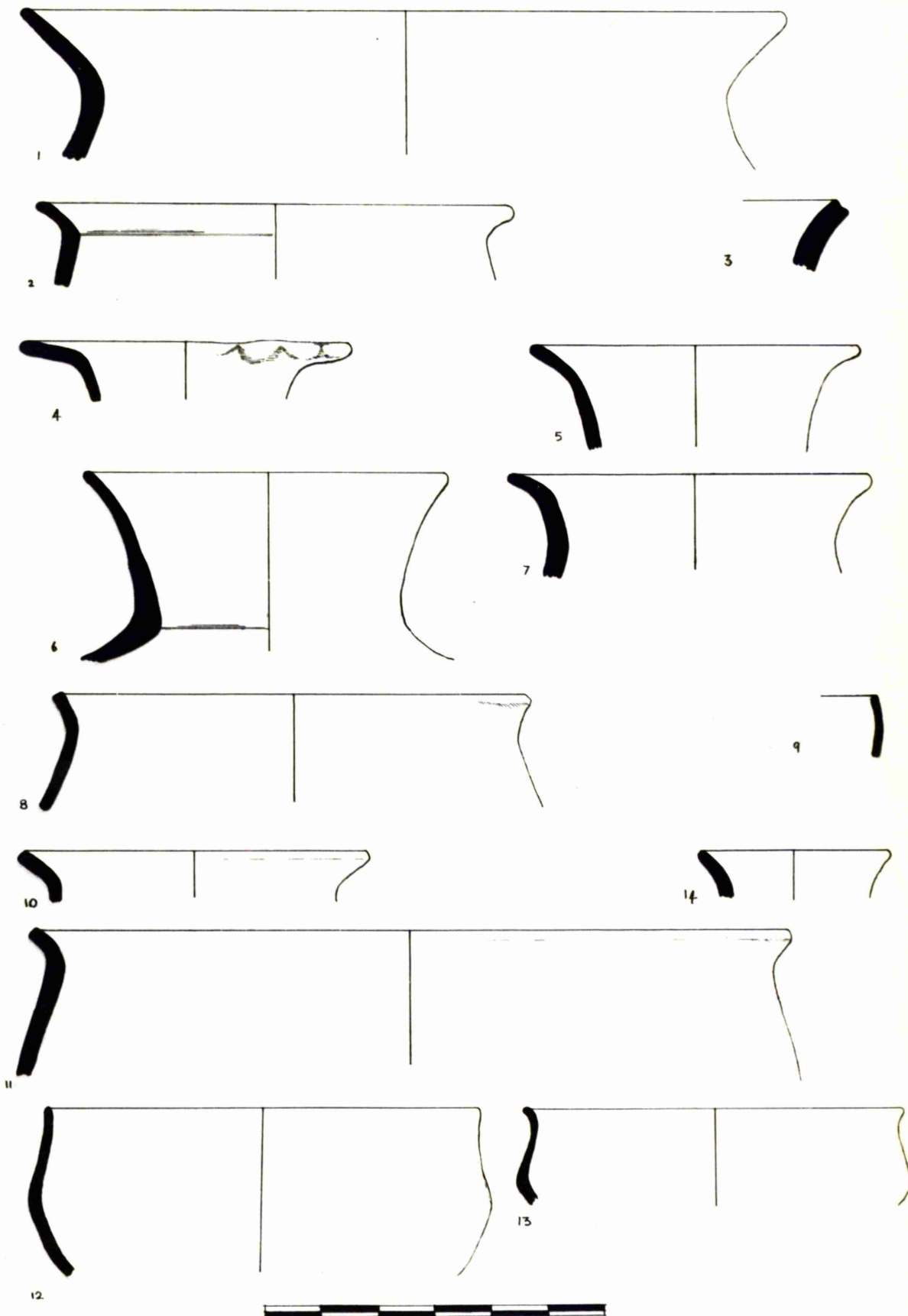
A.1. ware 1,2,3,4,12.

A.2. " 5-7, 10,14.

A.3. " 9.

A.5. " 8, 11, 13.

SITE No 91 PIKLIHAL



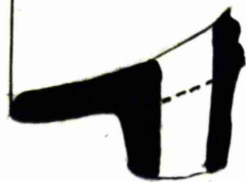
61. Site 91. cont.:-

A.1. ware 16 - 20.

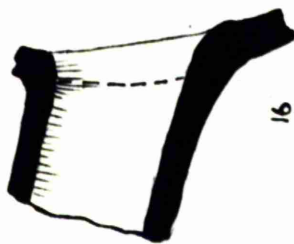
A.2. " 15.

SITE No 91 PIKLIHAL

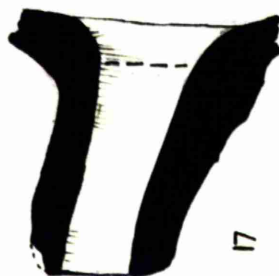
A



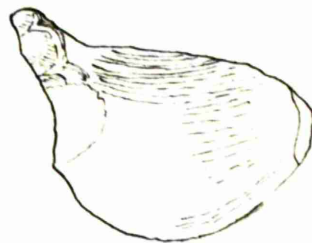
15



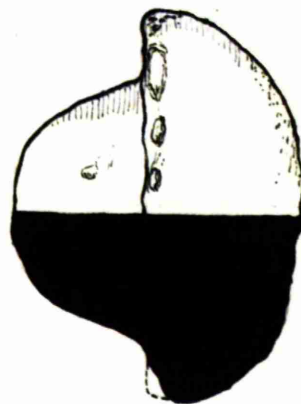
16



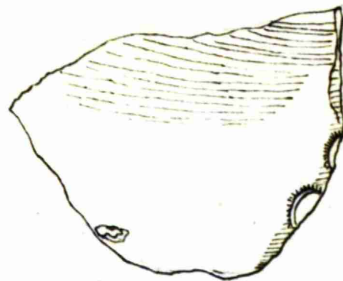
17



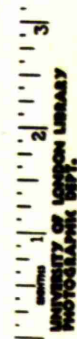
18



20



19

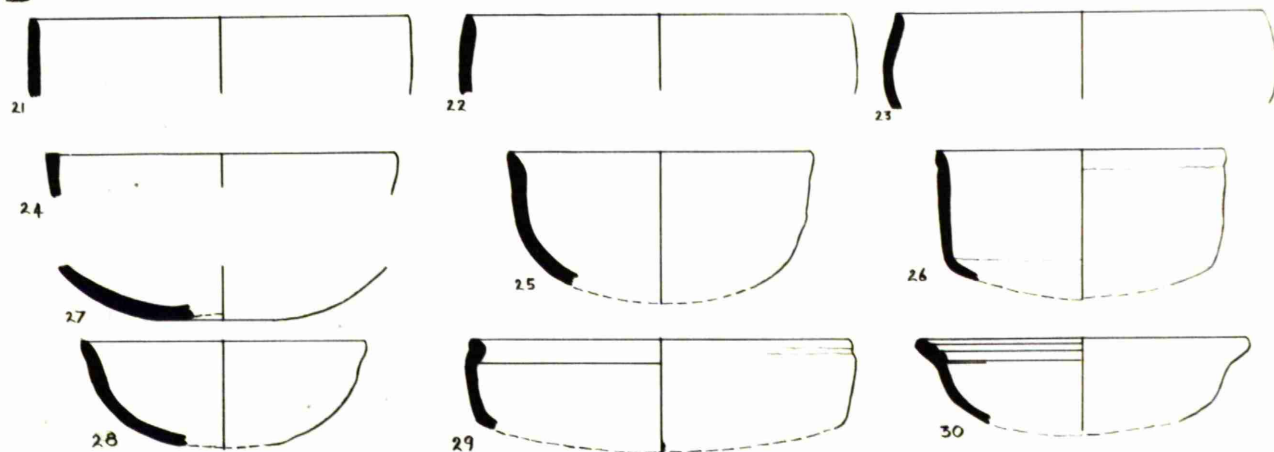


62. Site 91. Cont.:-

A.5.	ware	32,33. 745.
B.1.	"	21-27, 29-30, 37,39,49.
B.2.	"	34, 42.
B.3.	"	28,31,38,43,44,46-8.
B.4.	"	35,36,40,41.
D	"	50-2.

SITE No 91 PIKLIHAL

B



D

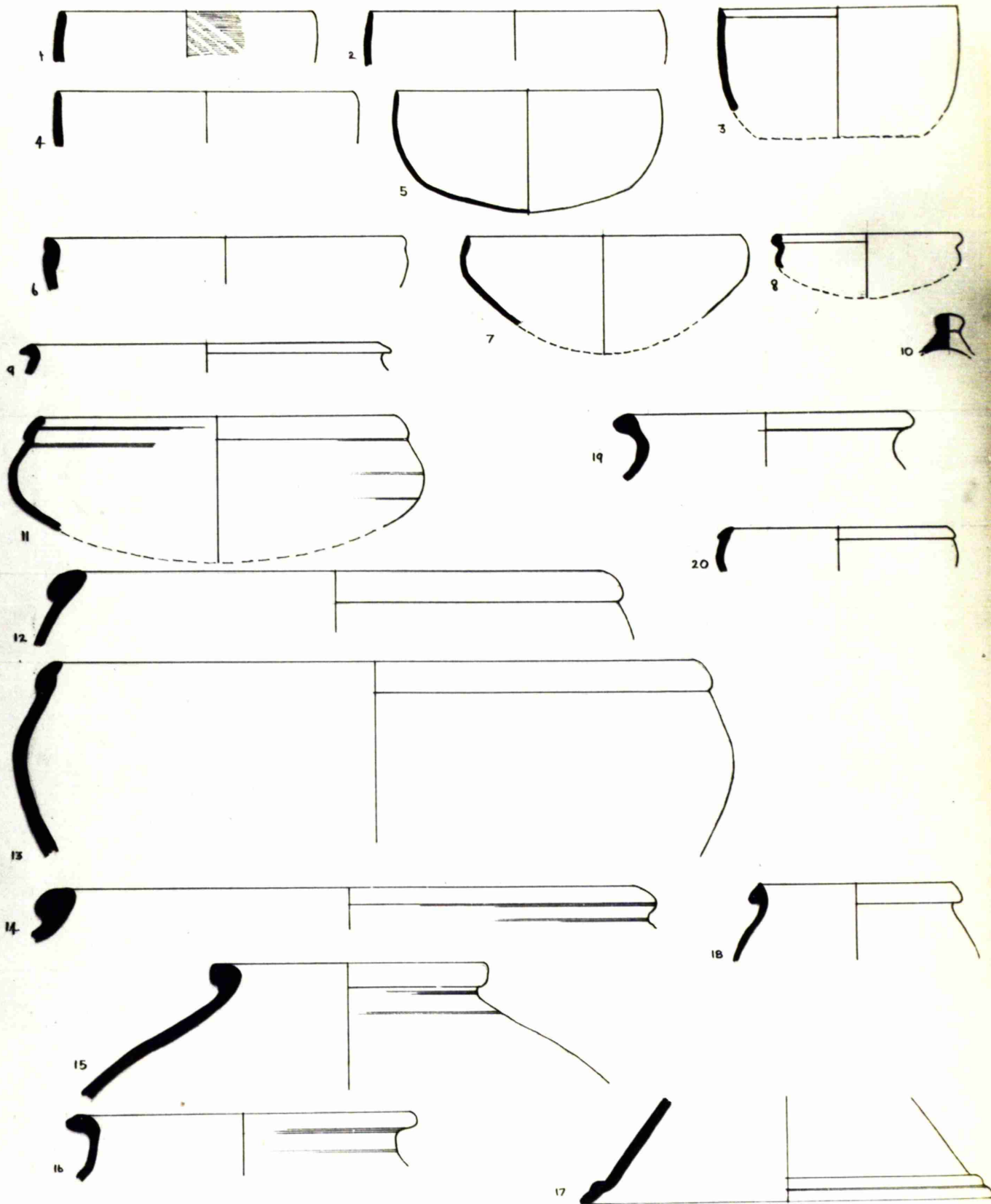
Pls. 63 - 84. Pottery from Surface
Collections and Previous Excavations,
Classified by Wares.

Pl. 63. Site 70 Anegundi Caves.

B.1.	wares	2 - 5, 7 - 10, 17, 18.
B.2.	"	1.
B.3.	"	6, 7, 12 - 16, 19.
B.	"	20 (not distinguishable).

B

SITE No 70 ANEGUNDI



64. Site 70 contd.:-

B.4. ware 21,23,25.

D. " 22, 24,26.

Site 6 - Benkal Forest.

B.1. ware 1 - 5.

(1 with post-firing scratched "mark")

Site 7 - Billamrayan Gudda

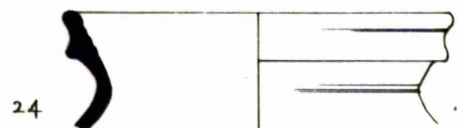
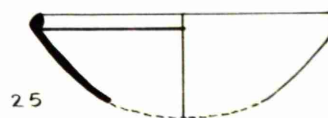
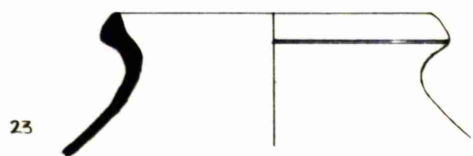
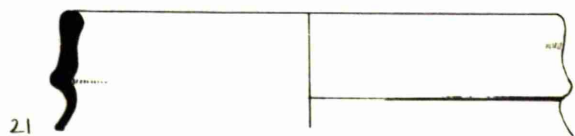
A.1. ware 3 - 8.

A.2. " 2.

A.5. " 1.

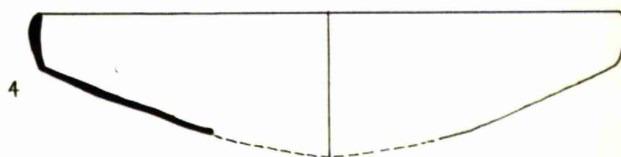
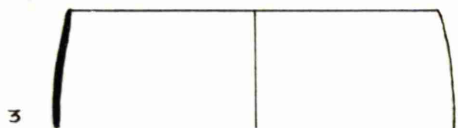
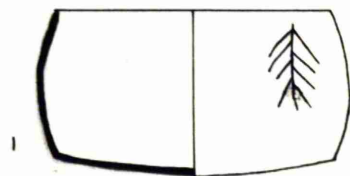
(8 is perforated)

SITE No 70 ANEGUNDI



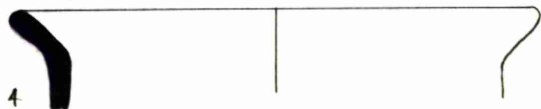
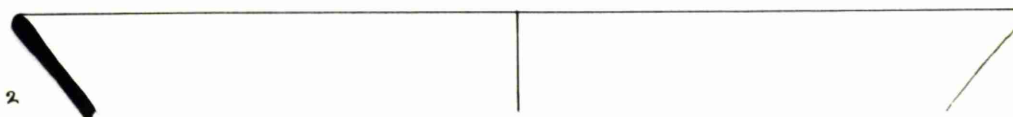
SITE No 6 BENKAL FOREST

B



SITE No 7 BILLAMRAYAN GUDDA

A



65. Site 7 cont.:-

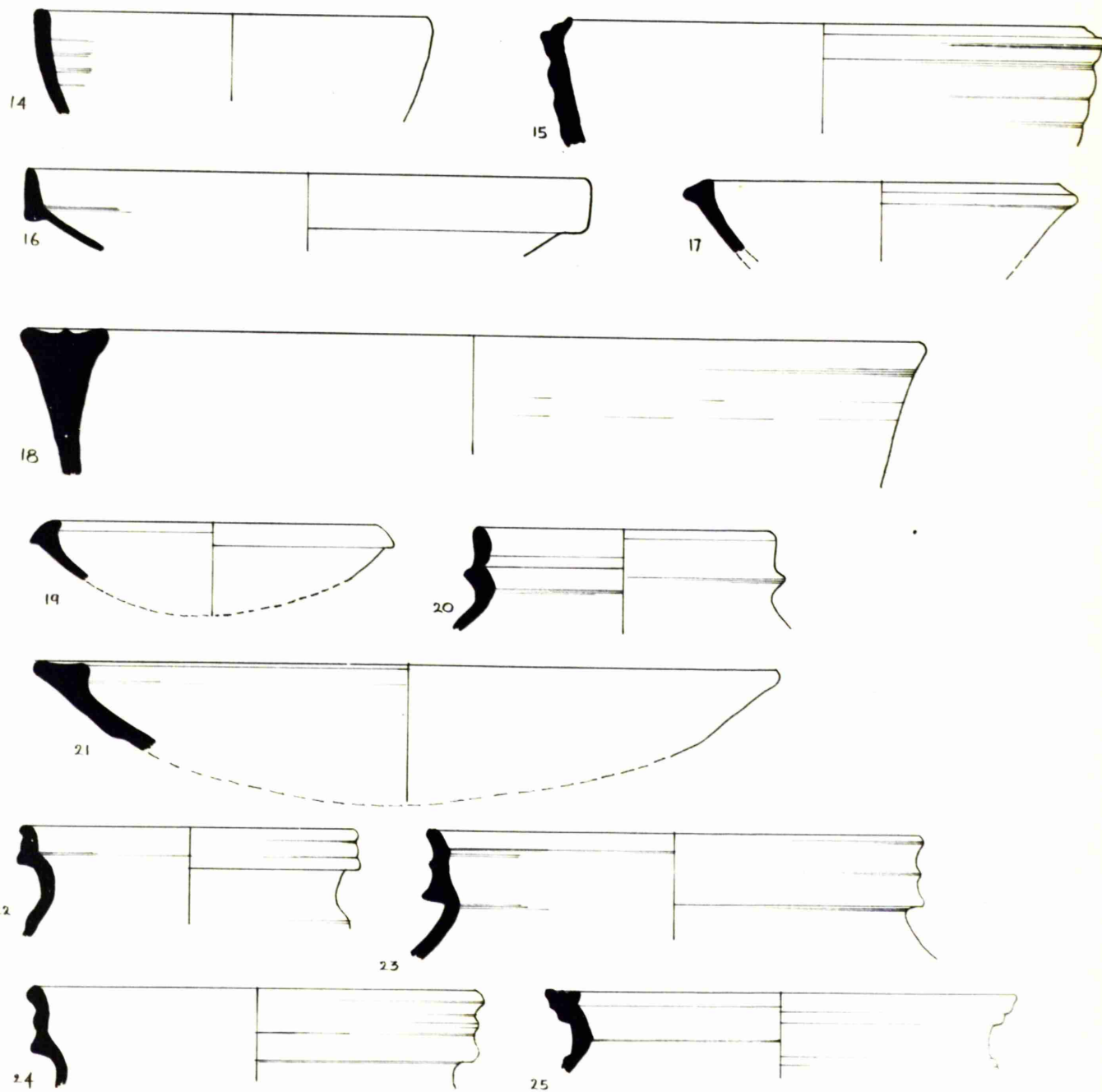
B.3. ware 9 - 13.

D. " 14 - 25.

B SITE No 7 BILLAMRAYAN GUDDA



D



66. Site 25 - Hunkunti (Hankunti)

B.3 Ware 1 - 3, 9 - 14.

B.4. " 4 - 8.

D. " 15 - 16.

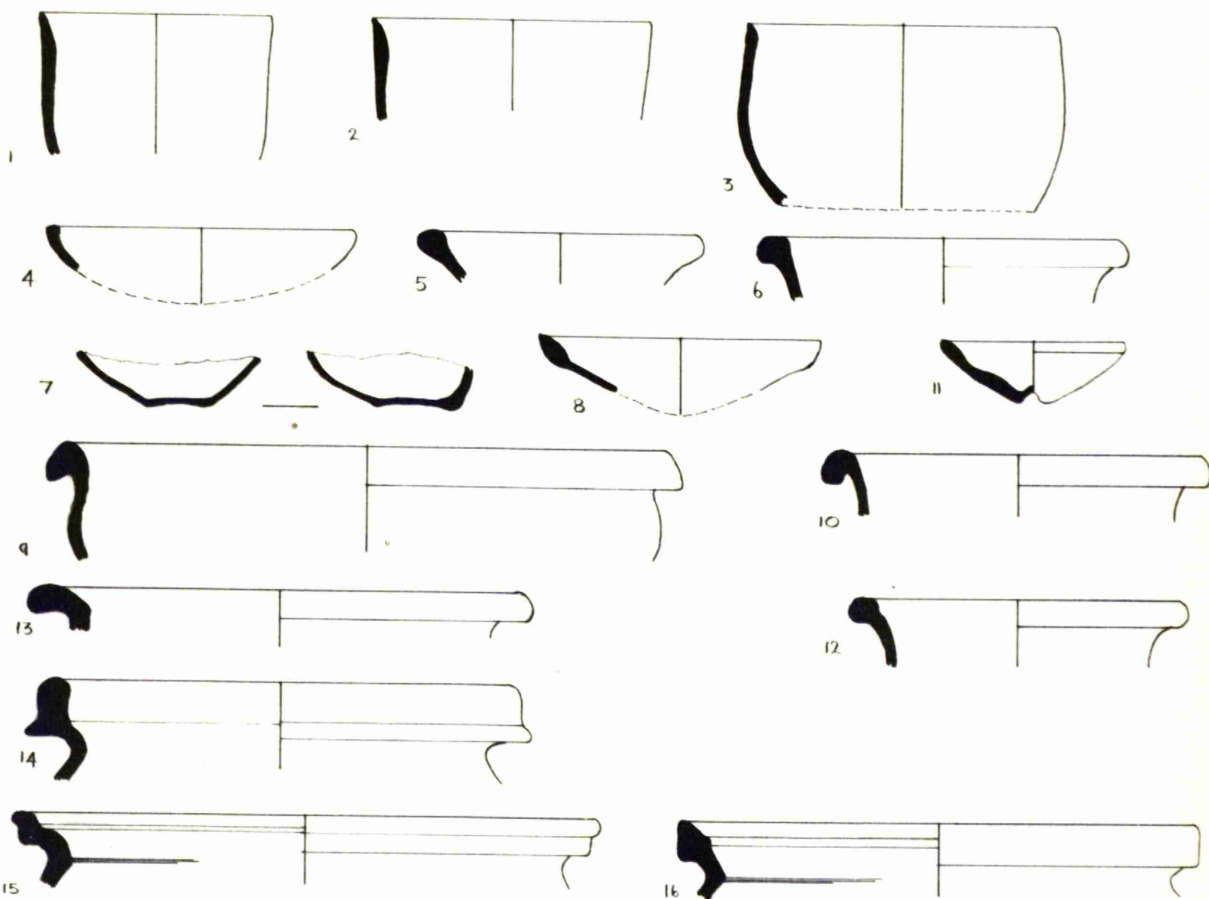
Site 80 - Jamshed.

B.3 ware 1 - 6.

D. " 7.

B

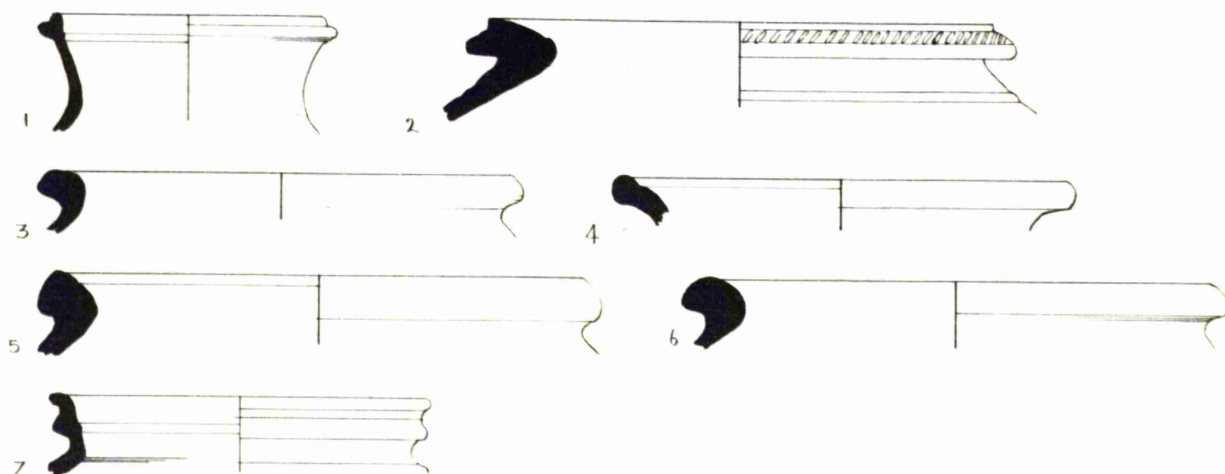
SITE No 25 HANKUNTI



D

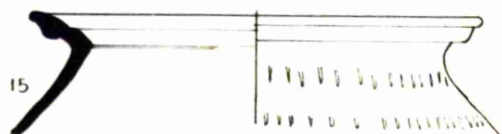
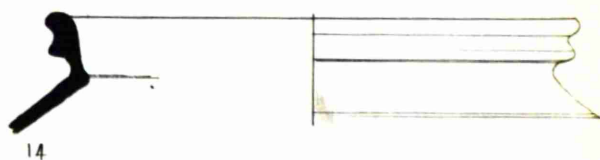
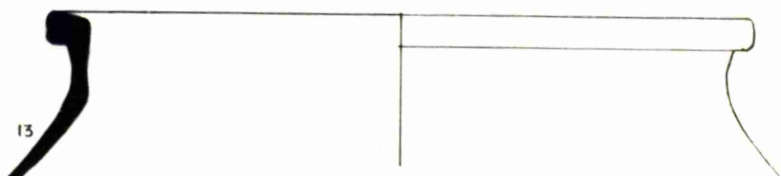
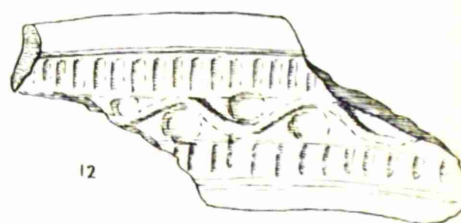
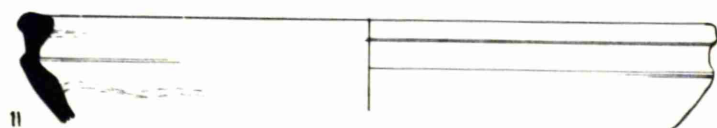
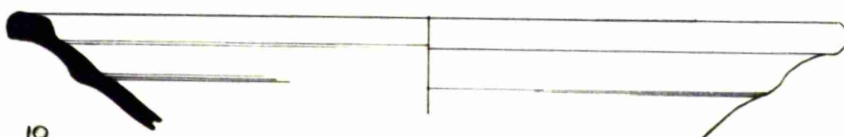
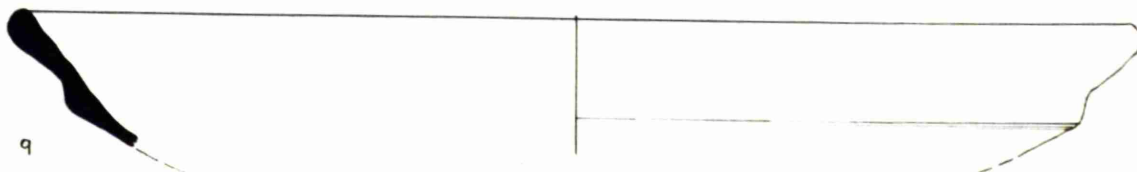
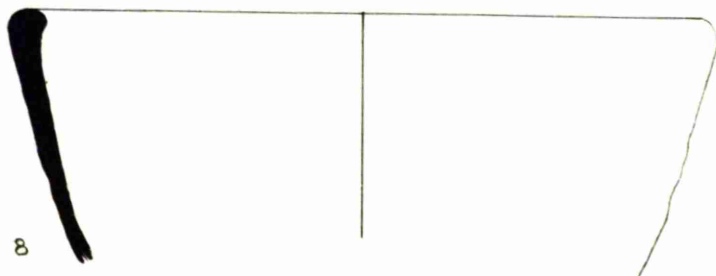
SITE No 80 JAMSHED

B



67. Site 80 cont.:-

D. ware 8 - 15.



68. Site 30 - Kallur.

A.1. ware 1.

A.2. " 2, 4.

A.5. " 3.

B.1. " 5, (5a,b,c,d,e,f not drawn) 6 (6a,b,
not drawn) 8 - 10. 15 (15a) - 17.

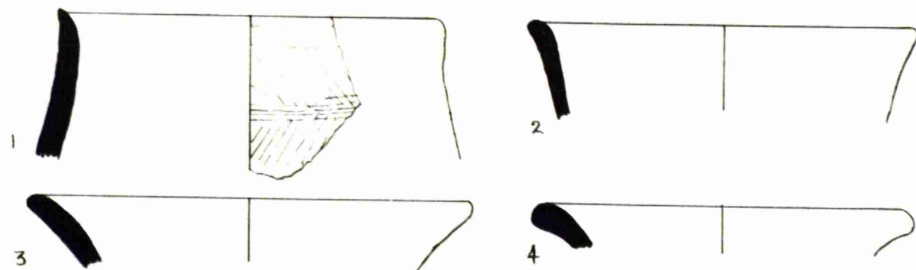
B.3. " 7, 18-26.

B.4. " 11 - 14.

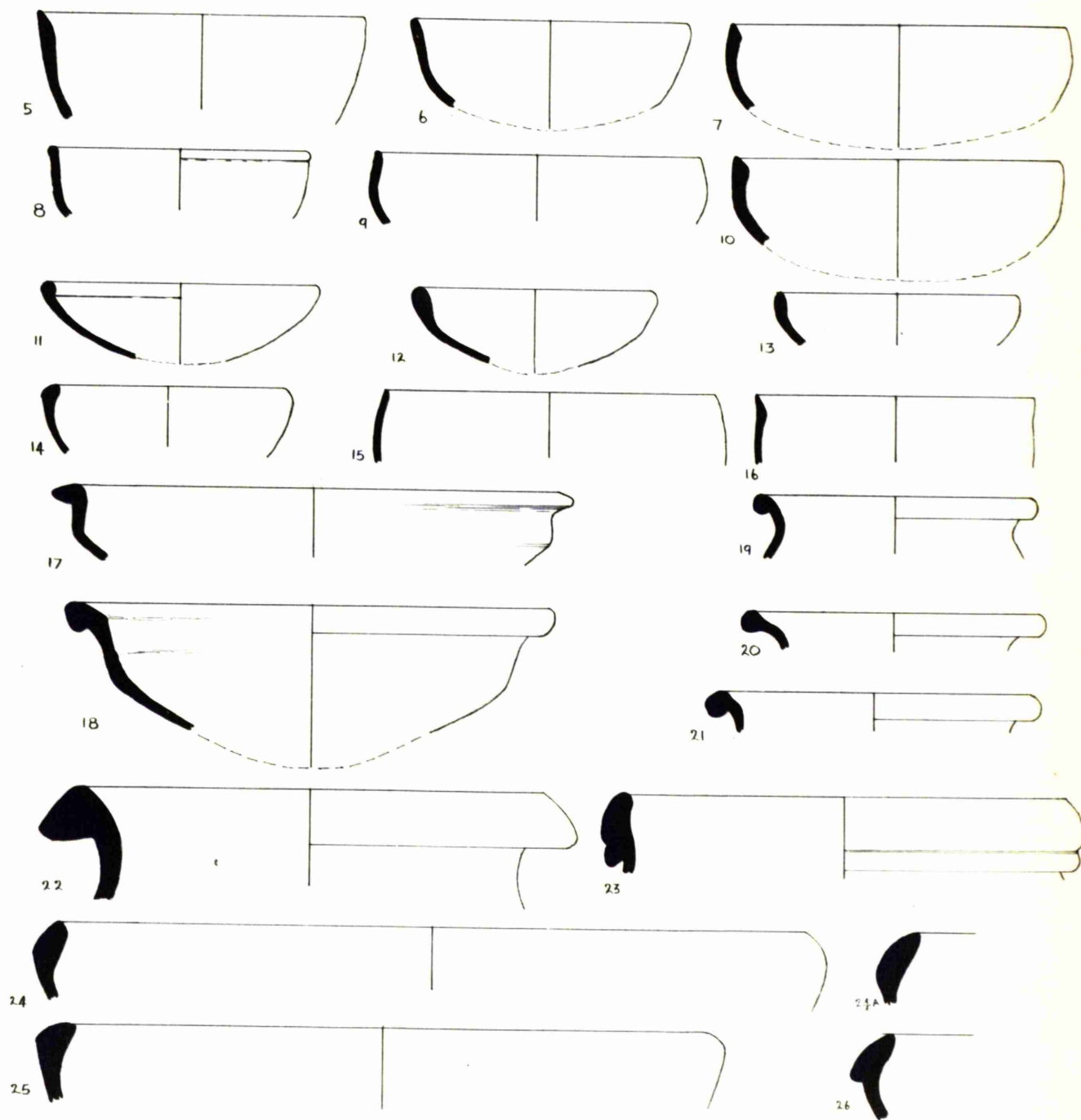
(1 has incised decorations).

SITE No 30 KALLUR

A



B



69. Site 30 contd.:-

D. ware 27 - 8.

Site 32 - Karatgi.

B.1. ware 16.

B.2. " 1 - 4.

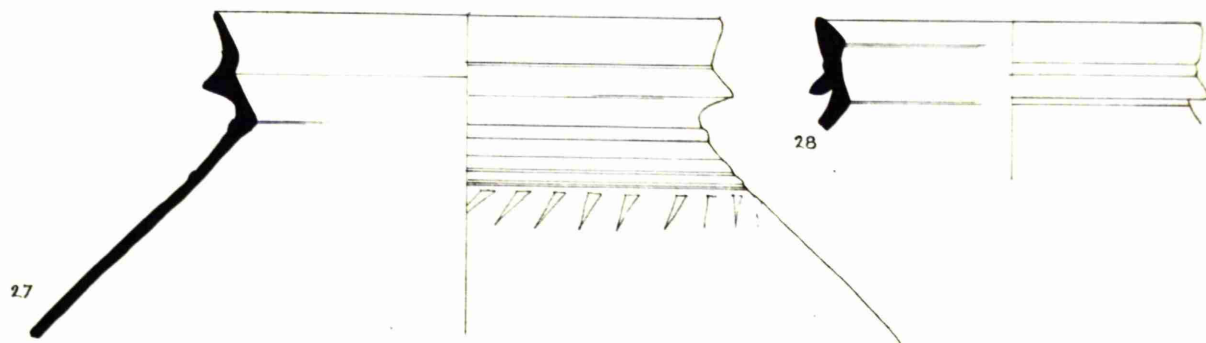
B.3. " 9,10,13,14,17.

B.4. " 5 - 8, 11 - 12, 15.

(17 is in the Geological Department, Hyderabad.
It was collected by Munn. ? Imitation of
C ware form).

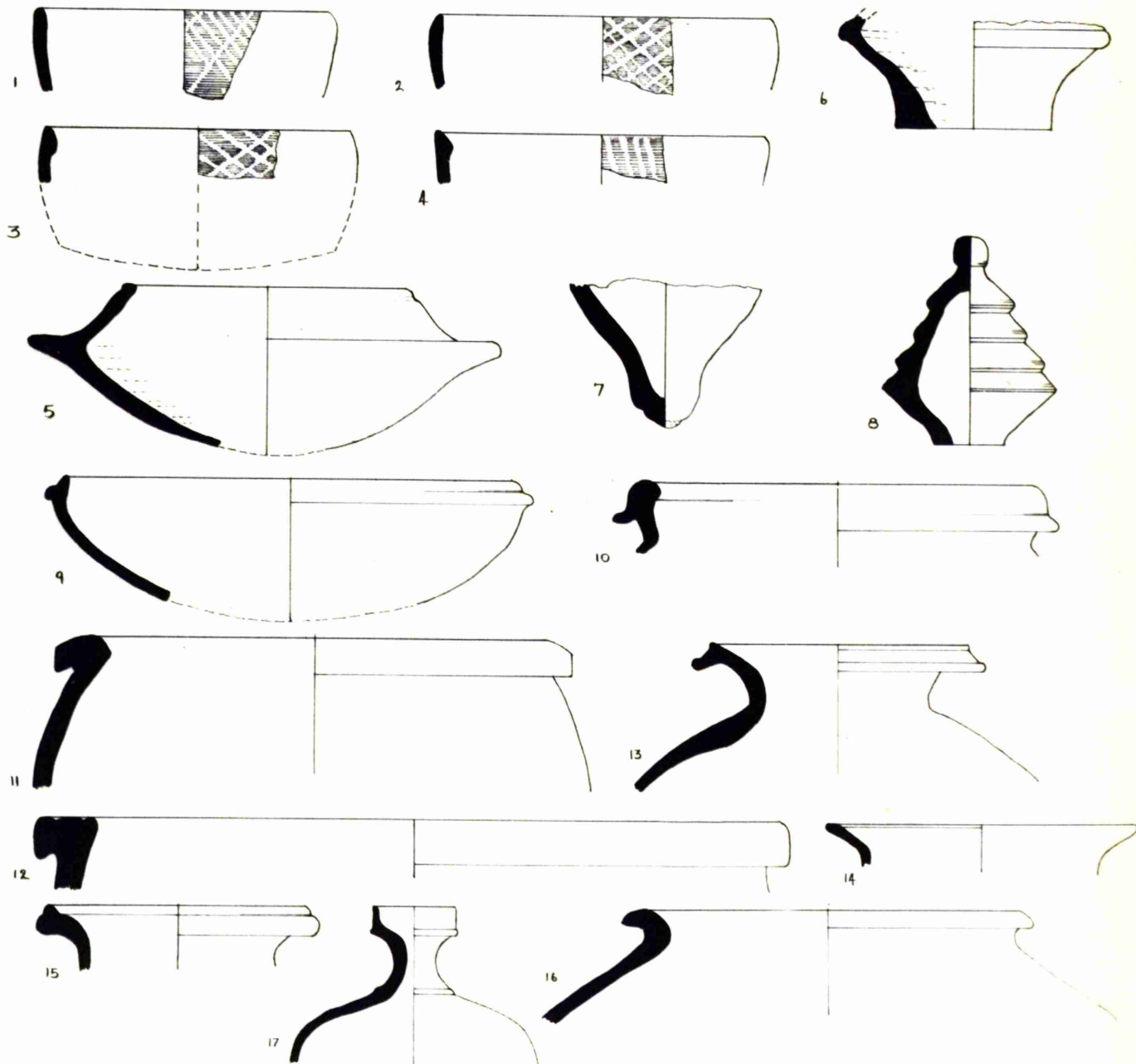
SITE No 30 KALLUR

D



SITE No 32 KARATQI

B



70. Site 35 Kavital.

B.3. ware 5 - 12.

B.4. " 1, 2.

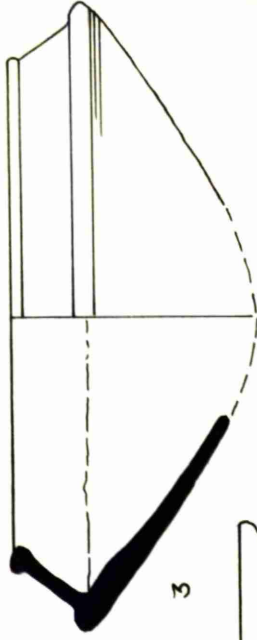
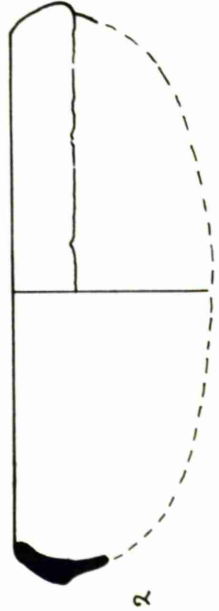
B.4 or

D. " 3,4,14.

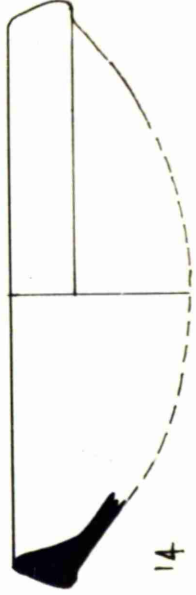
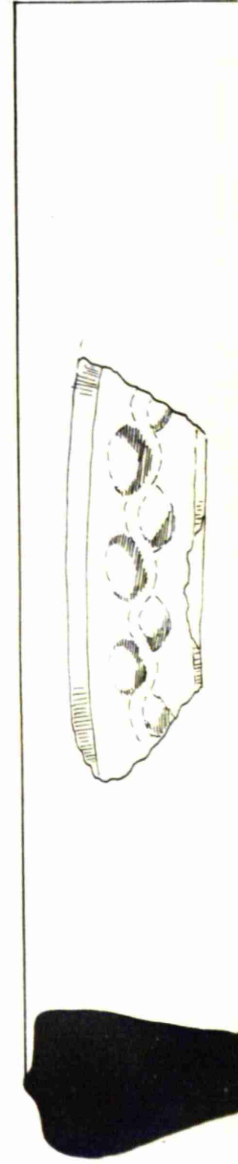
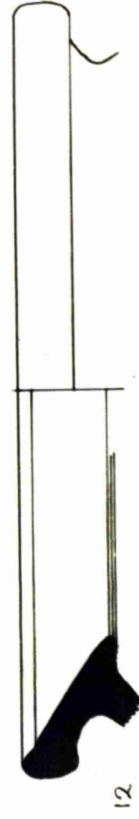
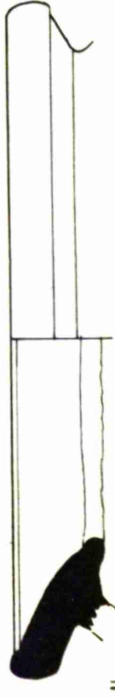
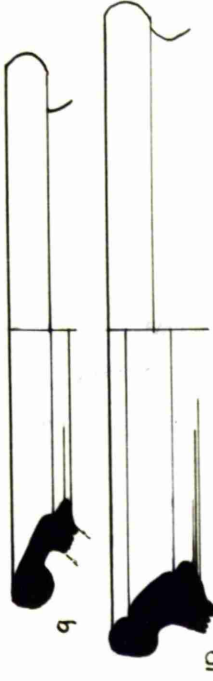
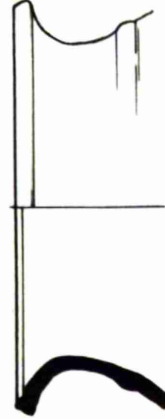
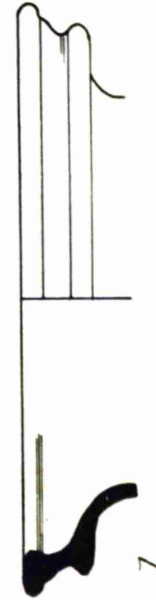
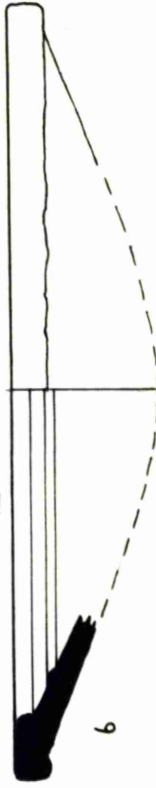
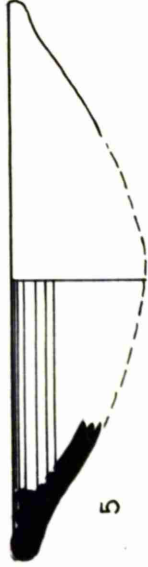
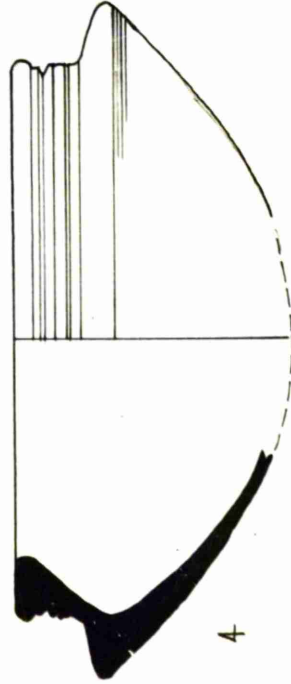
D. " 13.

SITE No 35 KAVITAL

B



D



UNIVERSITY OF LONDON LIBRARY
PHOTOGRAPHIC DEPT.

71. Site 36. Kopbal.

B.1. ware 6, 8.

B.2. " 1 - 3 (2a not drawn), 10.

B.3. " 4 - 5 (4a not drawn), 7, 9, 11, 15,
(15a not drawn).

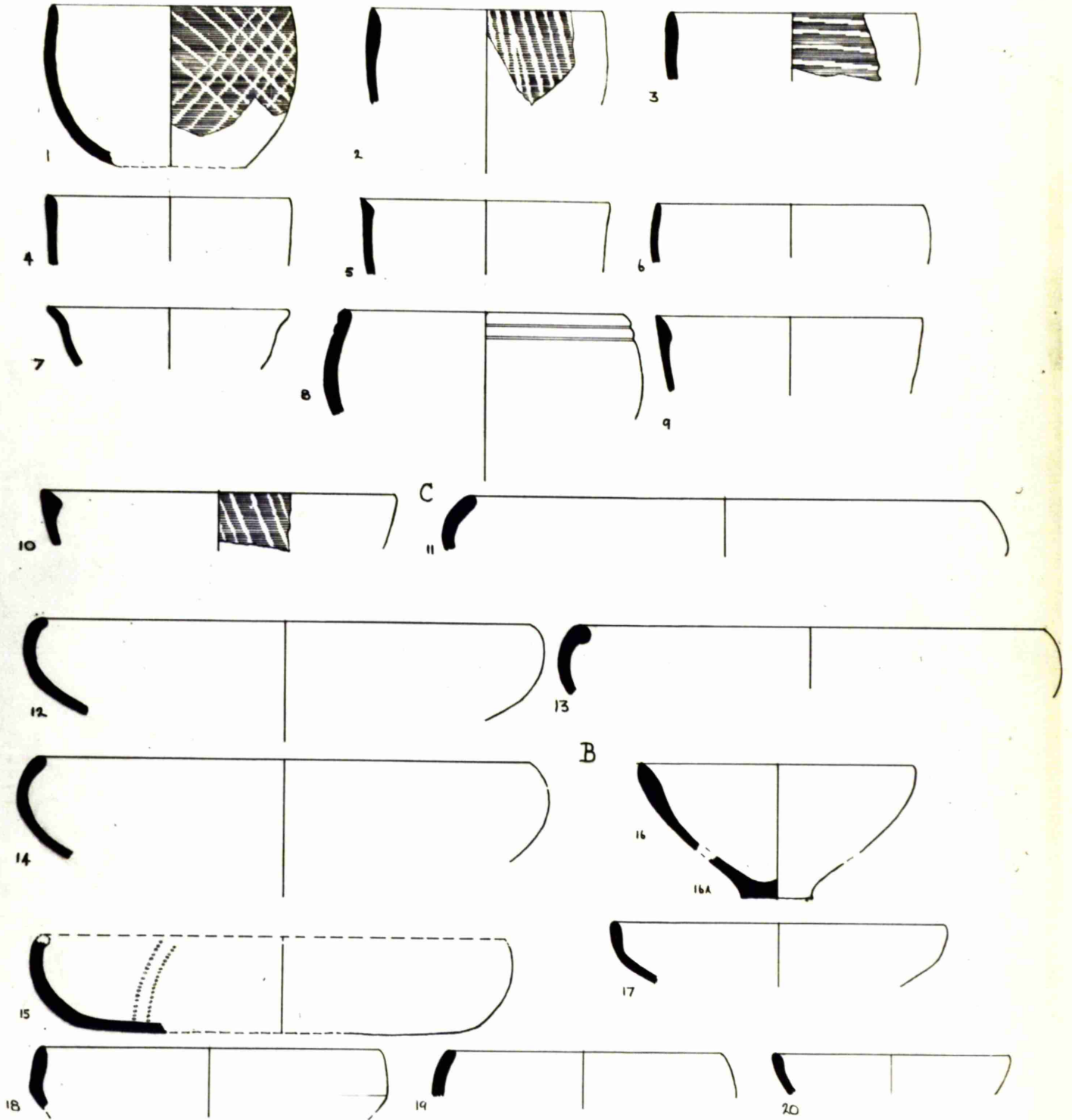
B.4. " 16 - 20 (16a not drawn).

C.2. " 12, 12, 14, (15b not drawn).

(15, 15a have rouletted decoration on inside
of bowl).

B

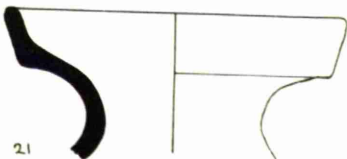
SITE No 36 KOPBAL



72. Site 36 contd.:-

- B.3. ware 21 -- 28, 30, 31, 33, 35.
- B.4. " 29 (29a not drawn).
- C.3. " 32 (32a not drawn), 33.
- D. " 36-8.

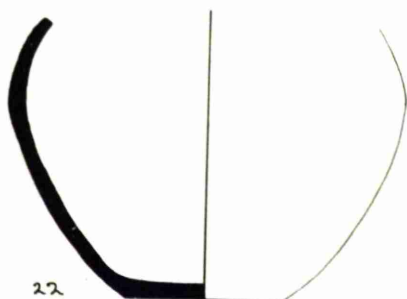
(33 is a necked vessel imitating C3 ware forms, 34 is a crucible and does not fall strictly in any other category).



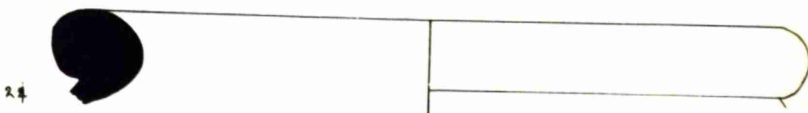
21



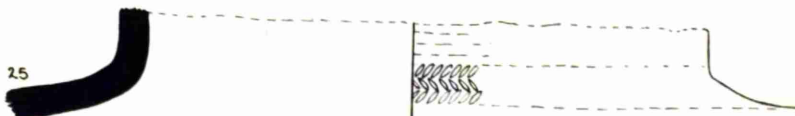
23



22



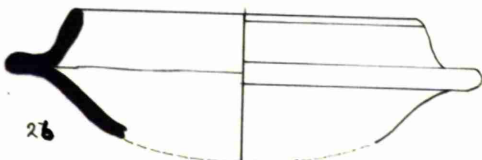
24



25



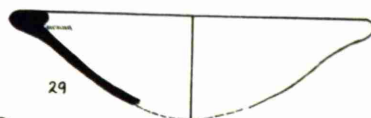
27



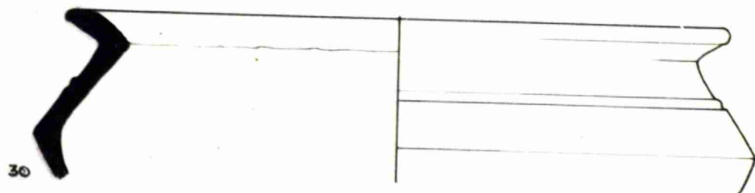
26



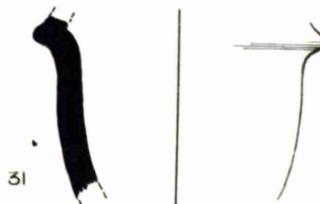
28



29



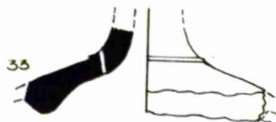
30



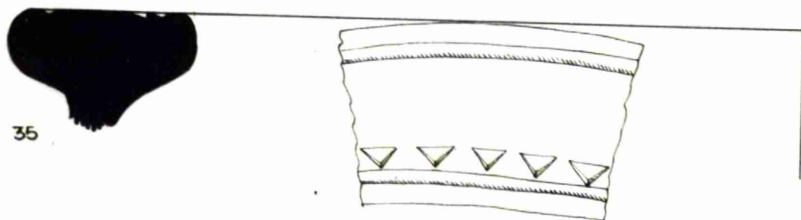
31



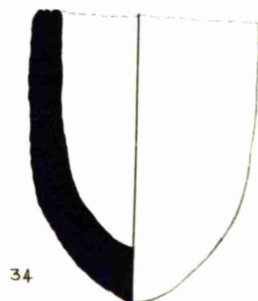
C 32



33



35



34

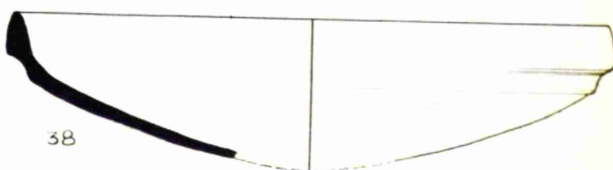


D

36



37



38

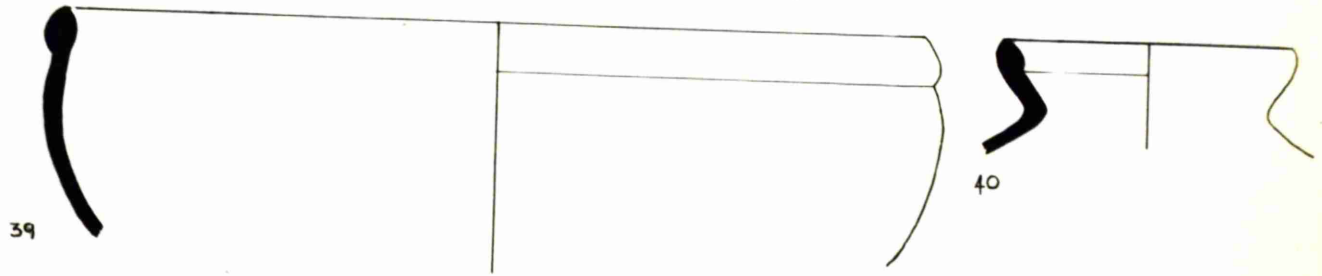
73. Kopbal - Malimalappa.

B.3. ware 39 - 42.

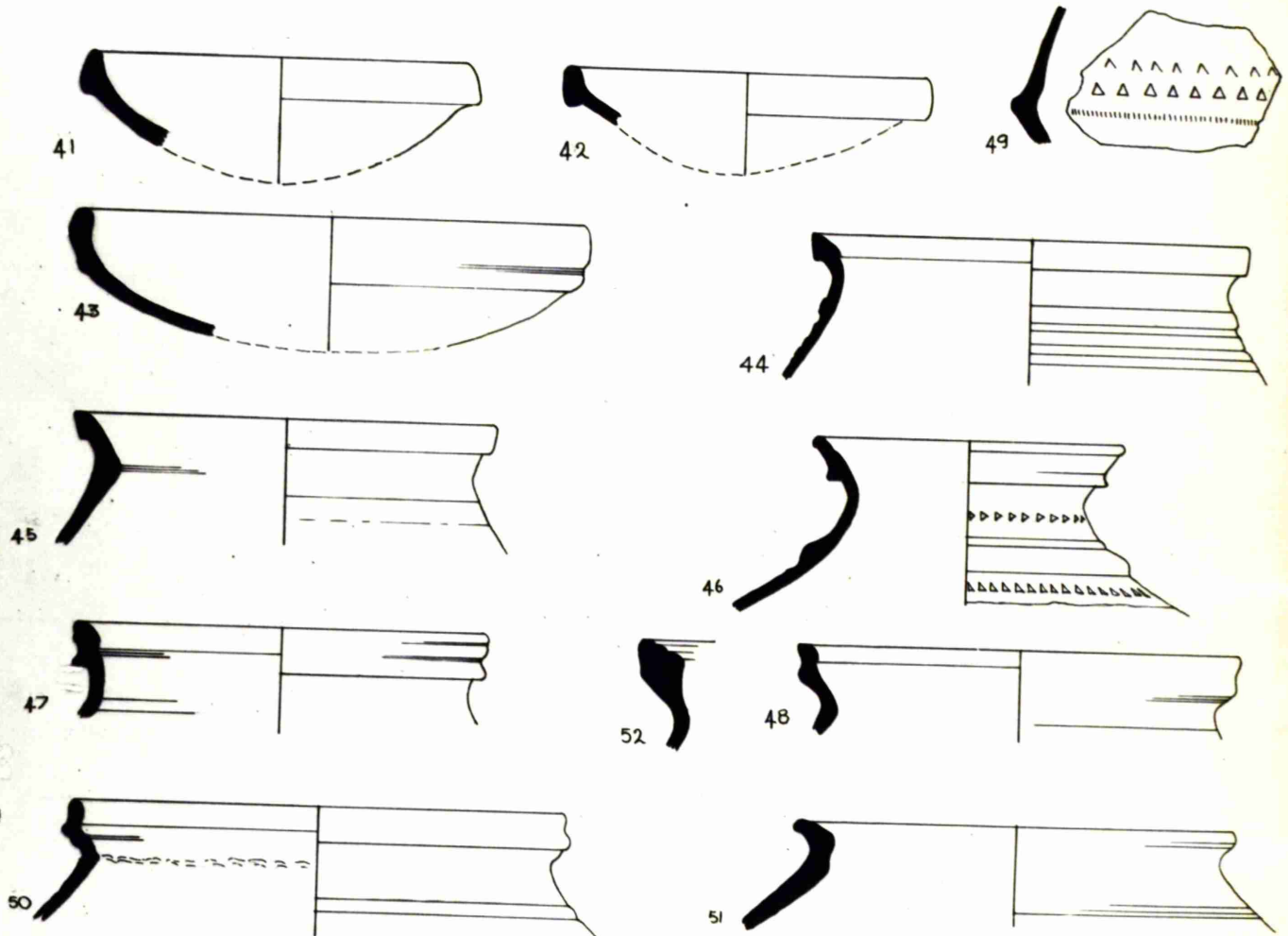
D. " 43 - 52.

(41 is a sherd comparable in ware to
Nos. 35.5, 8 and 9 above).

B



D



74. Site 41 Lingsugur Cant.

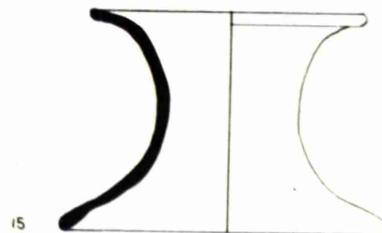
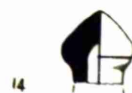
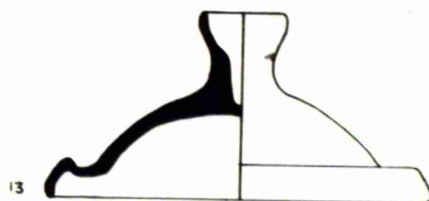
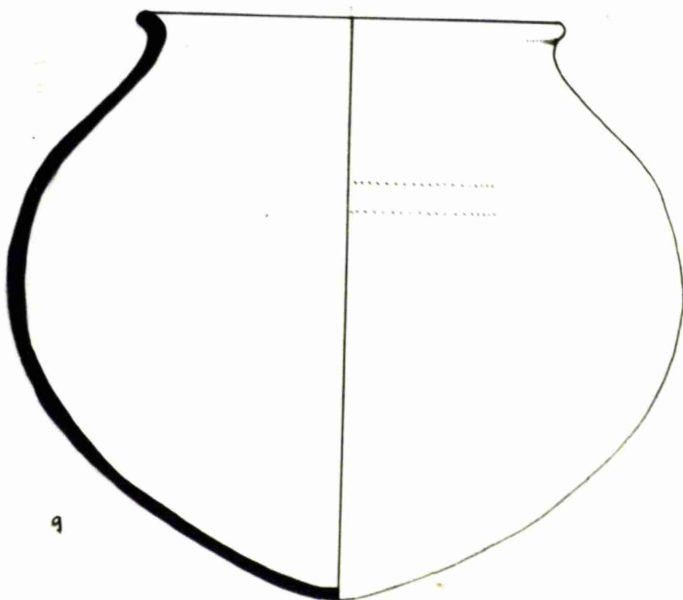
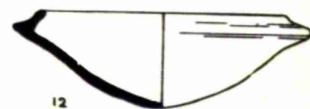
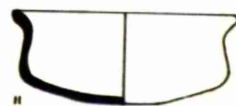
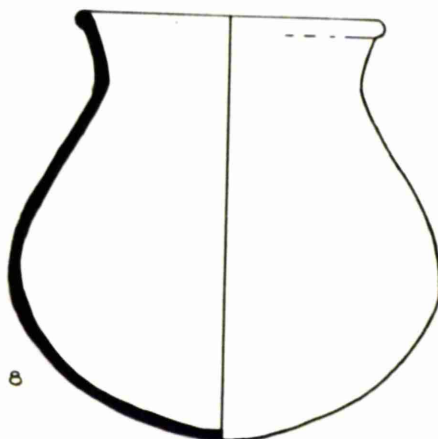
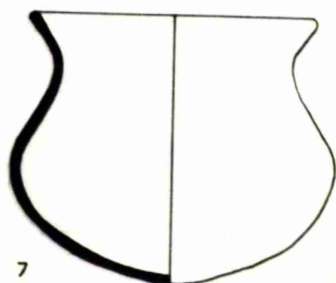
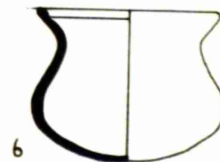
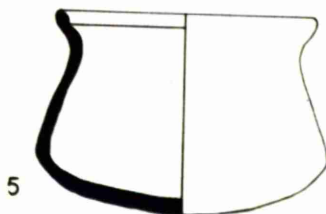
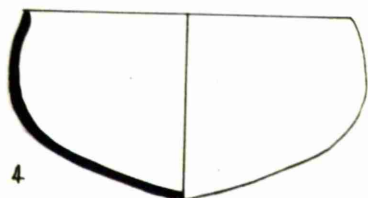
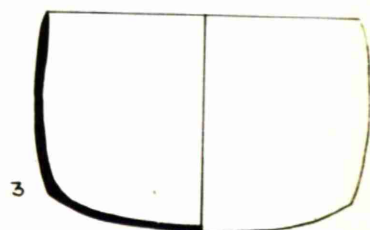
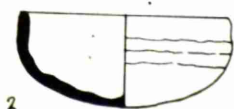
(All these pots were excavated by Munn from graves in the bed of the Tank, but have never been published. These specimens are still in store in the Department of Mines and Geology, Hyderabad).

B.1. ware 1 - 8, 13 (3a not drawn),

B.3. " 9, 14 - 15.

B.4. " 10 - 12.

B



75. Site 86- Manvi.

B.1. ware 1 - 3.

B.2. " 5, 6.

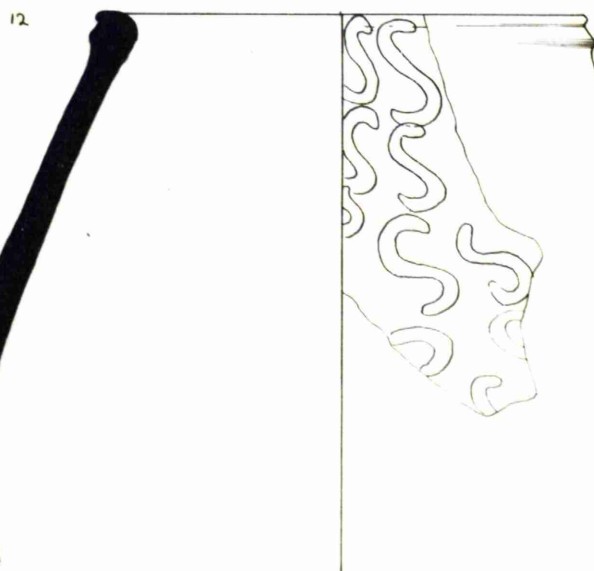
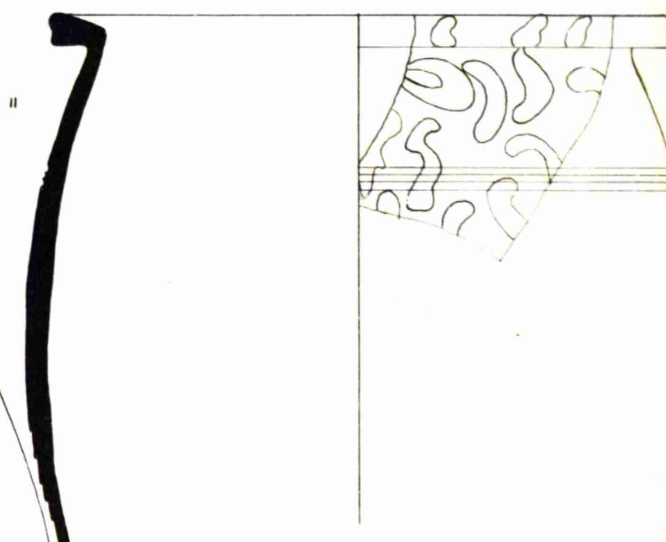
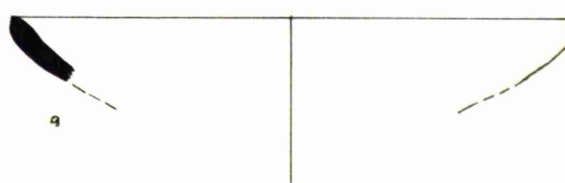
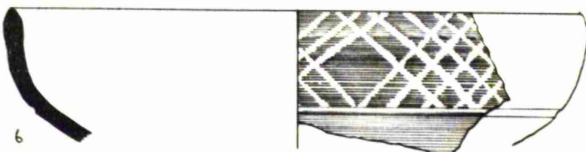
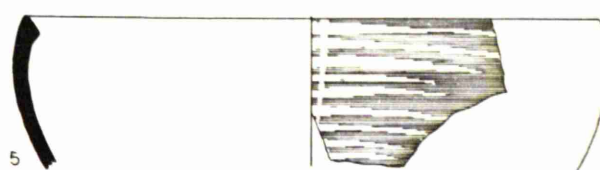
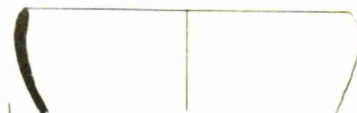
B.3. " 4,7,11 - 12.

B.4. " 9 - 10.

C.2.(?)" 8 (or might be B.3.: compare
Kopbal. 12)

(11 and 12 are painted with finger tip
designs and appear to be drums (mrid-
angam)).

B



76. Site 86 cont.:-

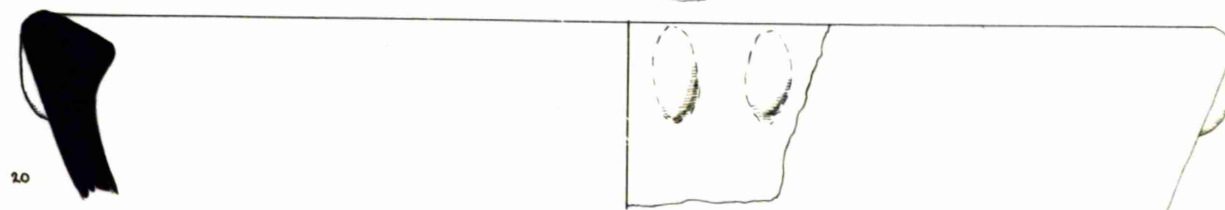
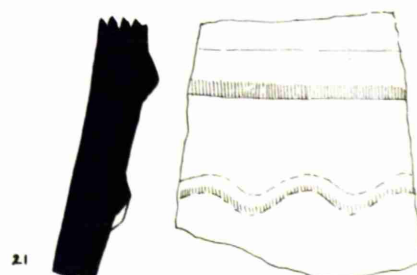
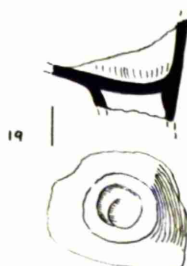
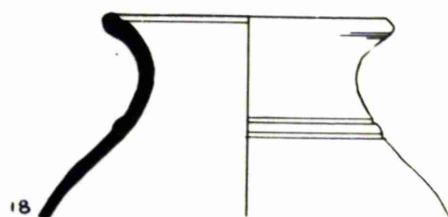
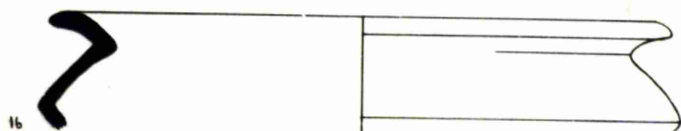
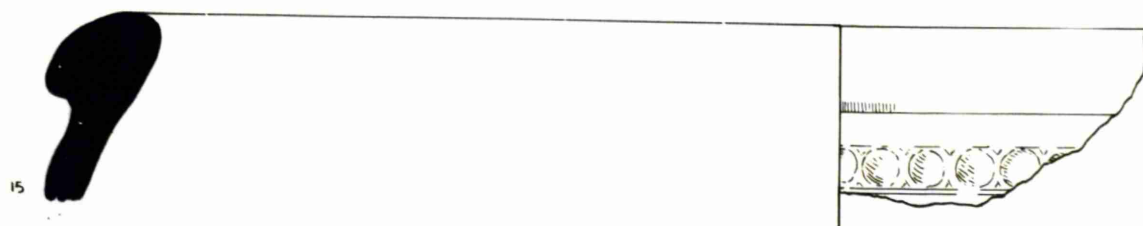
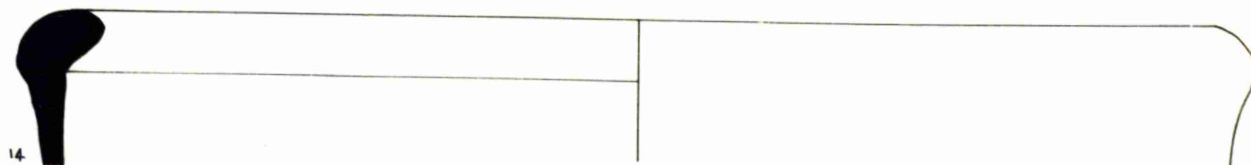
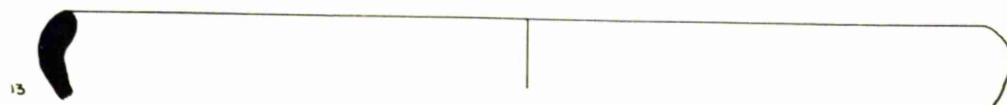
B.3. ware 13 - 19.

D. " 20 - 21.

Site 46. Manvi, North of.

1. Rim of bowl of chloritic schist.

B



SITE No 46 MANVI, NORTH of



77. Site 47 Maski.

(Numbers marked * are in the Maski Museum, those marked (H.M.) are in the Hyderabad Museum, those marked / were collected in Sultan Mohammed's field by Munn. Other sherds were collected by the writer).

A.1. ware 3.

A.3. " 4 - 6.

A.5. " 1*, 2*.

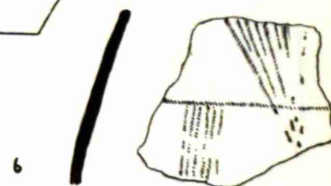
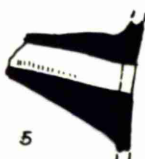
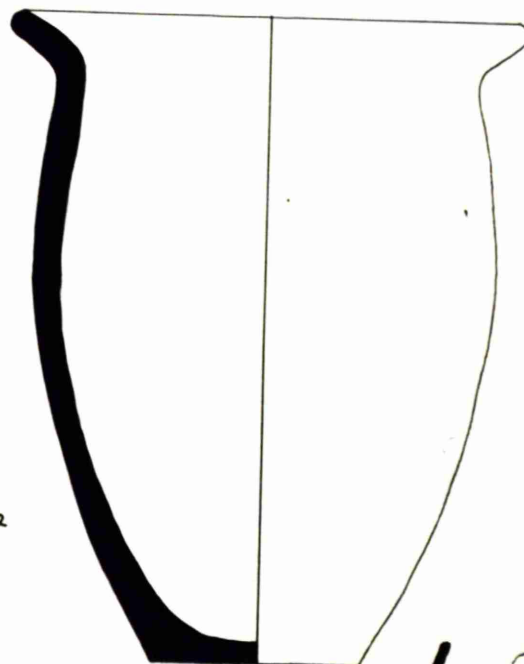
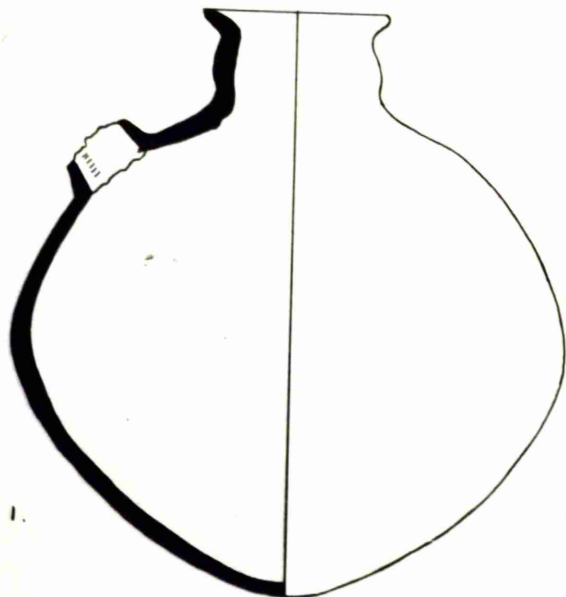
B.1. " 10*, 11* 12*, 13* 14*, 15*.

B.2. " 7/, 9*.

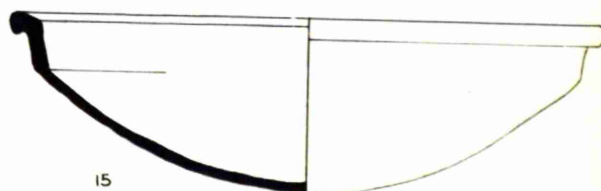
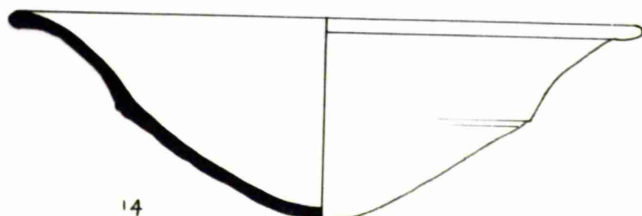
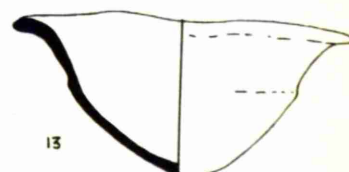
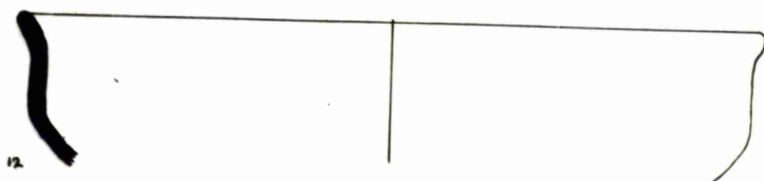
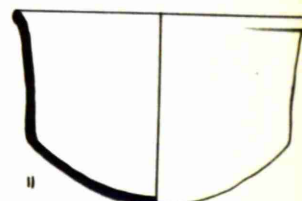
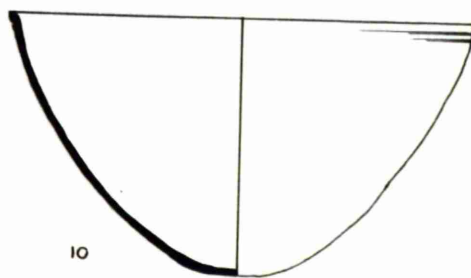
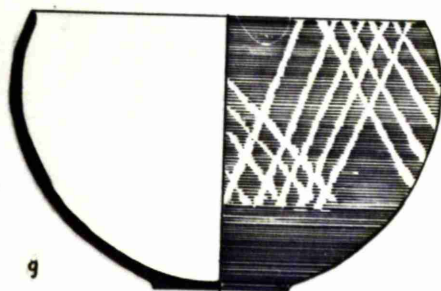
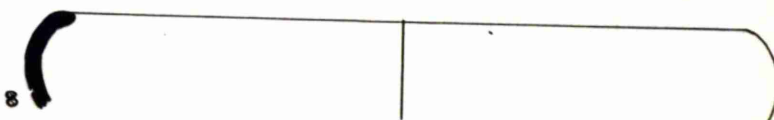
B.3. " 8.

(6 is painted and came from gully N.W. of Sultan Mohammed's field. All others from S.M.'s. field).

A



B



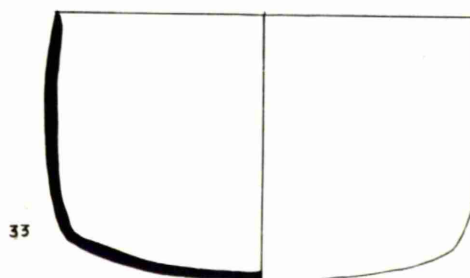
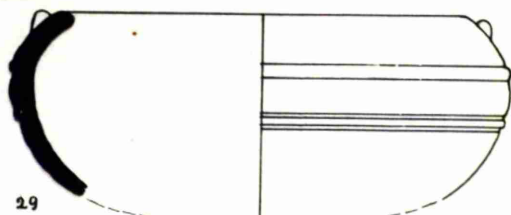
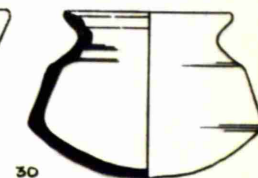
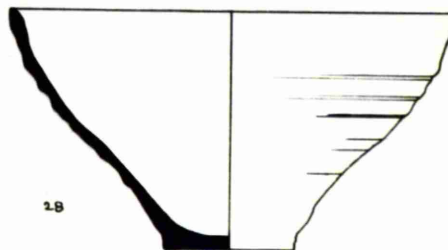
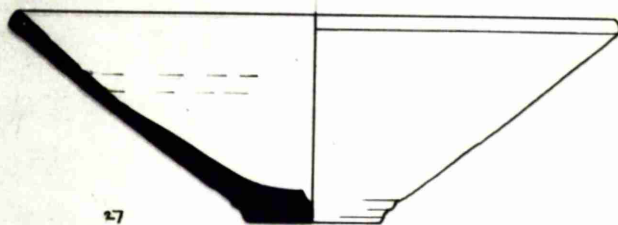
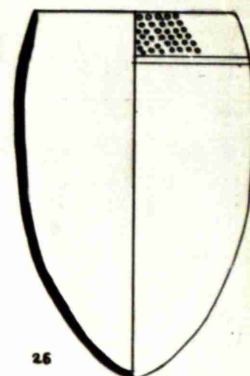
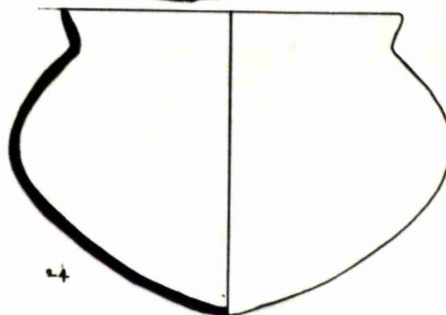
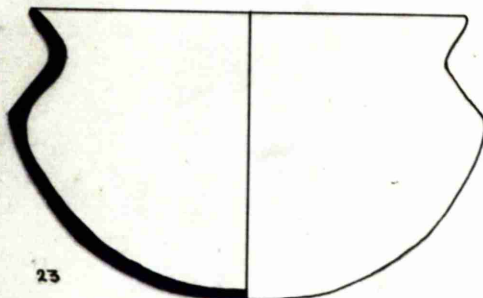
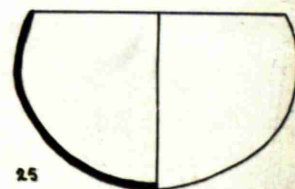
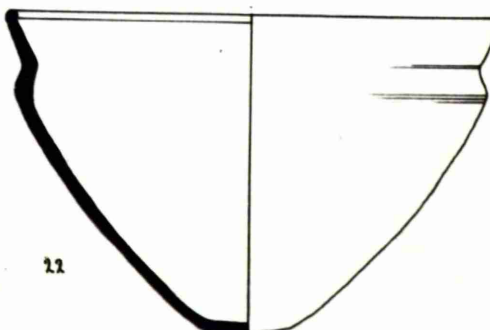
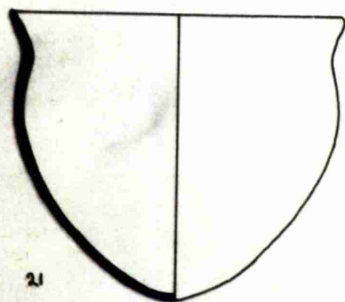
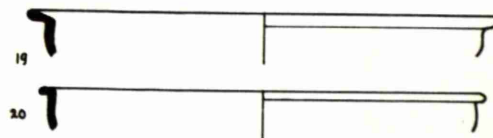
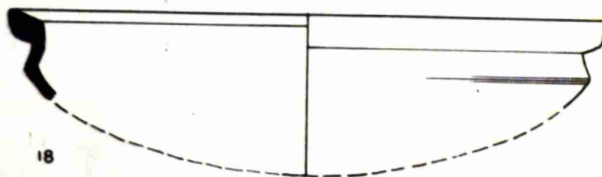
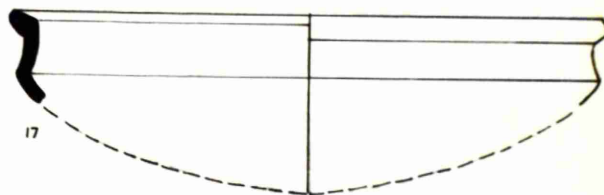
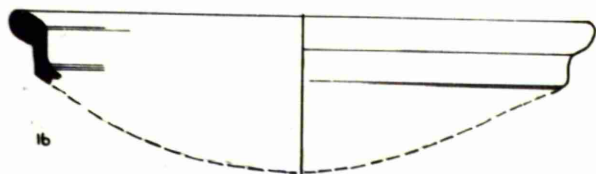
78. Site 47 contd.:-

(See note to Pl. 77).

B.1. ware 16 - 20, 21* - 24*, 25 H.M. 26 H.M.,
30*, 31, 32 H.M., 33 H.M.

B.4. " 27*, 28*, 29.

B



79. Site 47 cont.:-

(See note to Pl. 77).

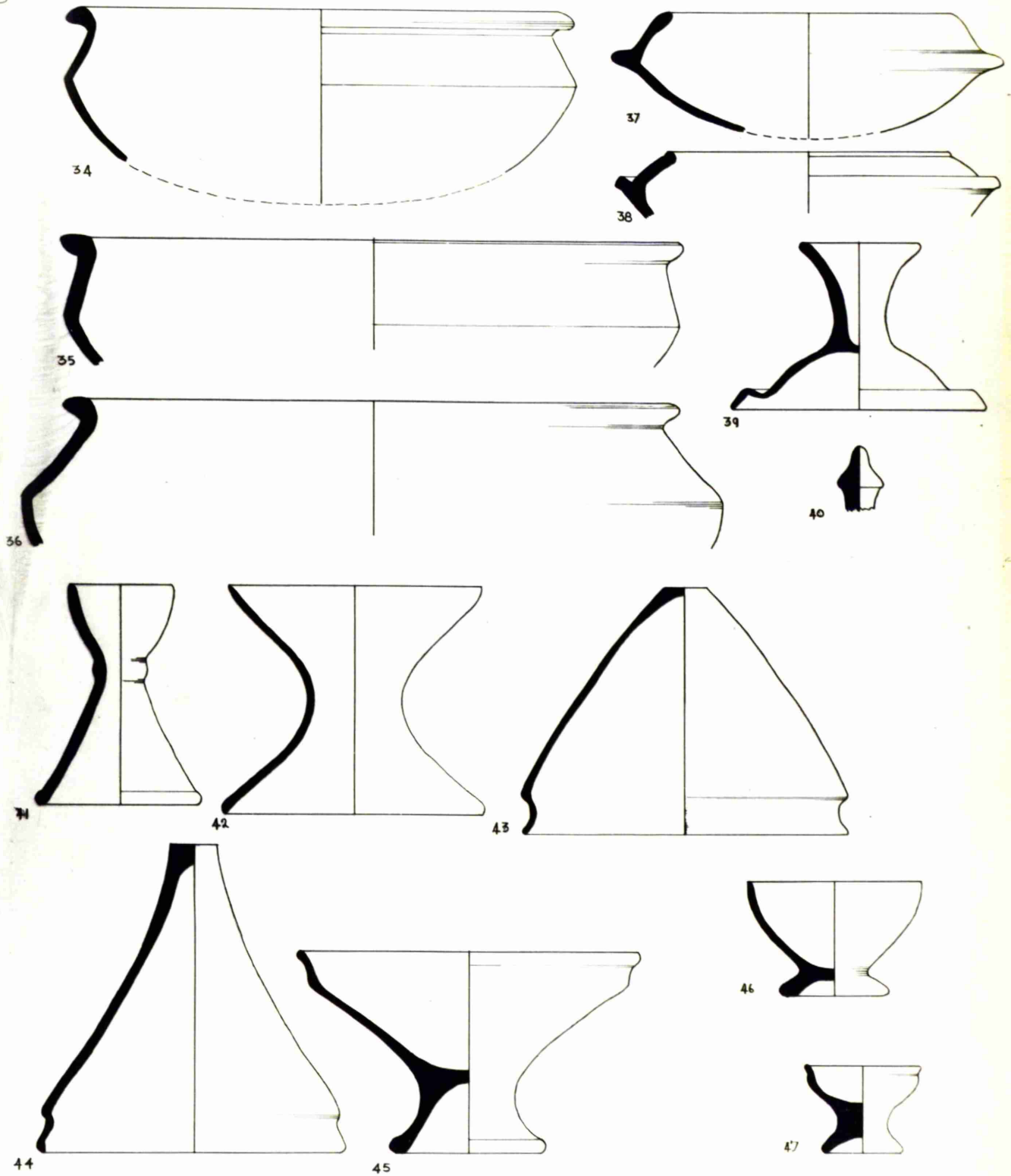
B.1. ware 39 H.M., 40 H.M., 41 H.M., 43*, 44*,
45*, 46*, 47*.

B.3. " 34 - 6, 42*.

B.4. " 37 - 8.

SITE No 47 MASKI

B



80. Site 47 contd.:-

(See note to Pl. 77)

B.1. ware 48.

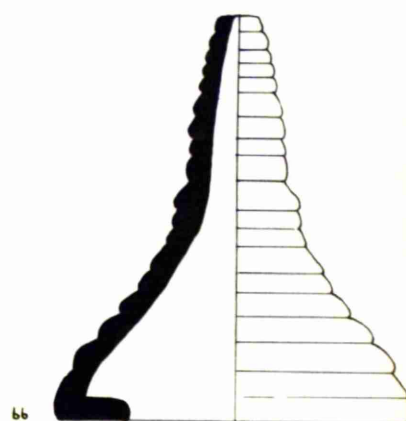
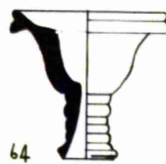
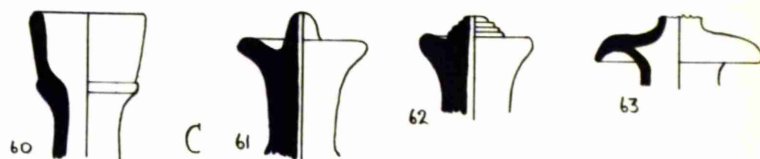
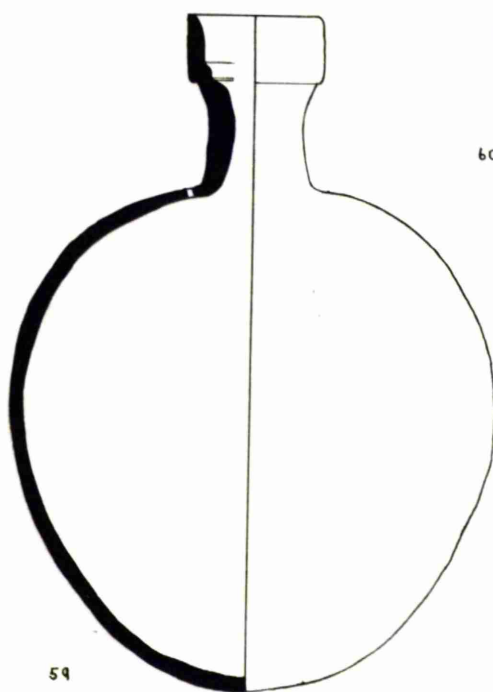
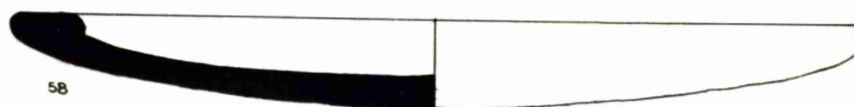
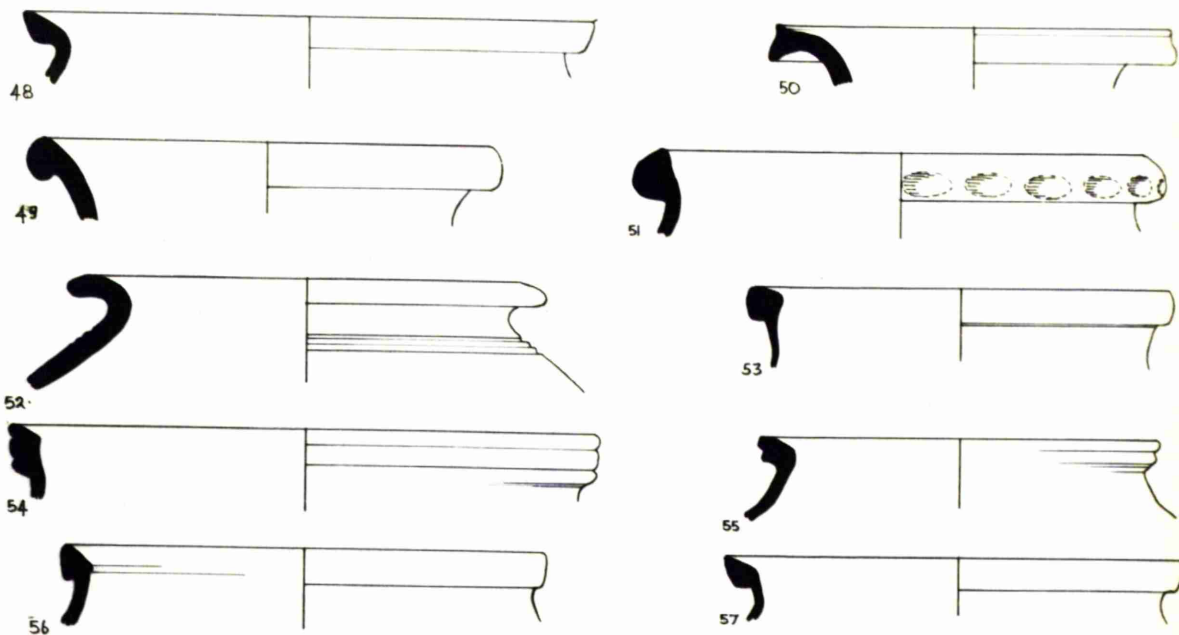
B.3. " 49 - 54, 55* - 60*.

C.3. " 61*, 61a H.M., not drawn, 62 H.M.,
63 H.M., 64 H.M.

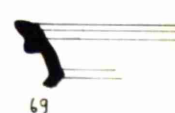
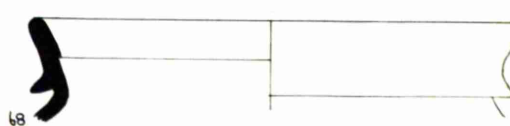
D. " 66*, 67-9.

(65* is a pipe of chloritic schist from Kuttri field; 48-57 are all from S.M's F and probably parts of round bellied water pots used for collected cremation remains; 59* is an imitation C.3. ware form).

B



D



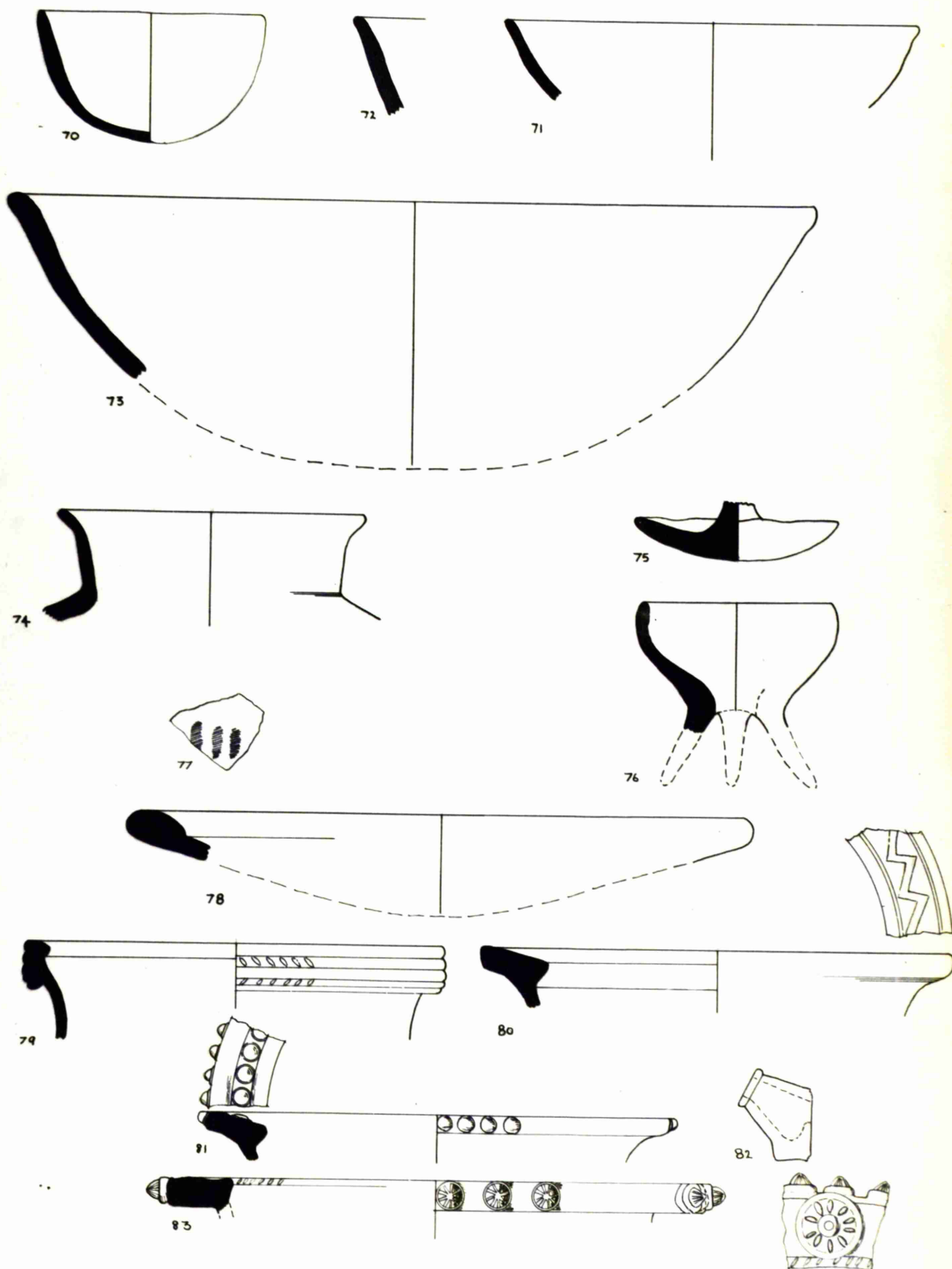
81. Site 47 contd.

(70 - 83 were collected by Gordon and described in his "Cultures of Maski and Madhavpur". The A sherds came from "two small caves north of the main inscription cave", the remainder from S.M.'s F.).

- A.1. ware 70.
- A.2. " 71 - 75.
- A.3. " 76.
- A.4. " 77.
- B.3. " 78 - 9.
- B.4. " 80 - 83.

(73 has vestiges of a band of red paint on inside of rim; 76 has a red ochreous slip and resembles a specimen from the same area illustrated in A.R.H.A.D. 1935-6 Apx. D. and Pl.IVa; 77 is a buff ware with purple paint; it is clearly wheel thrown).

A



82. Site 55 - Peddapahad.

B.1. ware 1 (1A not drawn) - 5.

Site 92 - Ratanhal.

B.2. ware 1 (1a not drawn).

B.3. " 4 - 7.

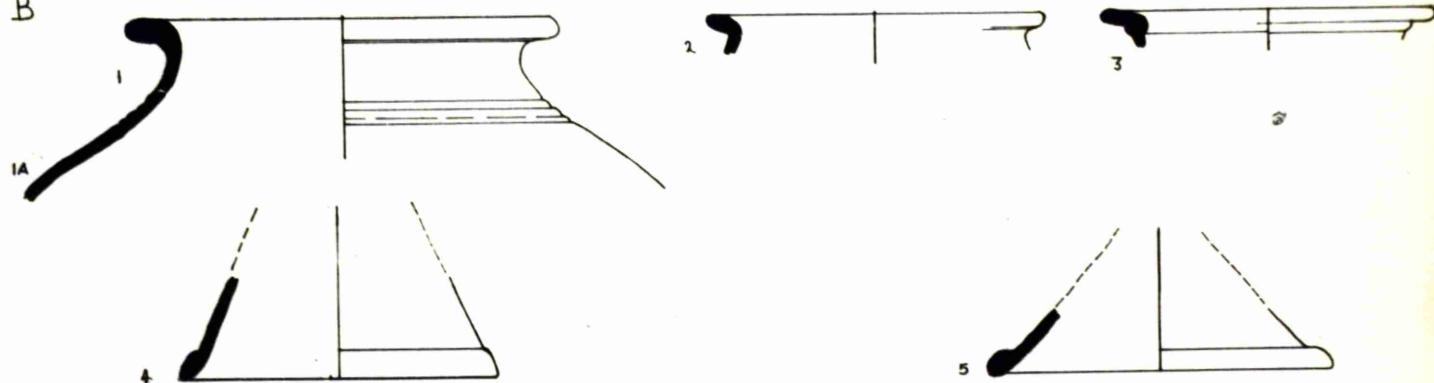
B.4. " 2, 3.

D. " 8.

(2 in form resembles a neolithic bowl).

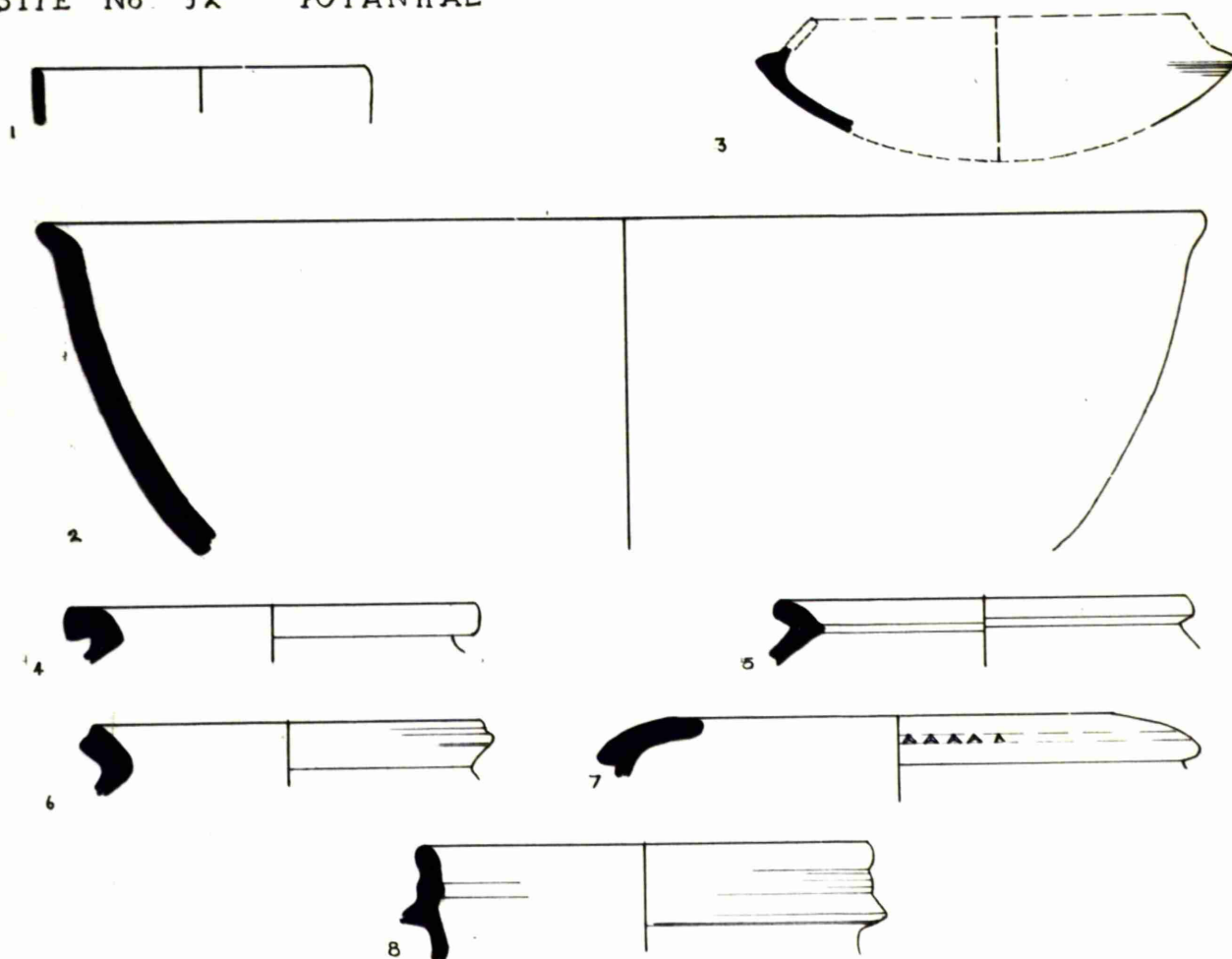
SITE No 55 PEDDAPAHAD

B



SITE No 92 POTANHAL

B



D

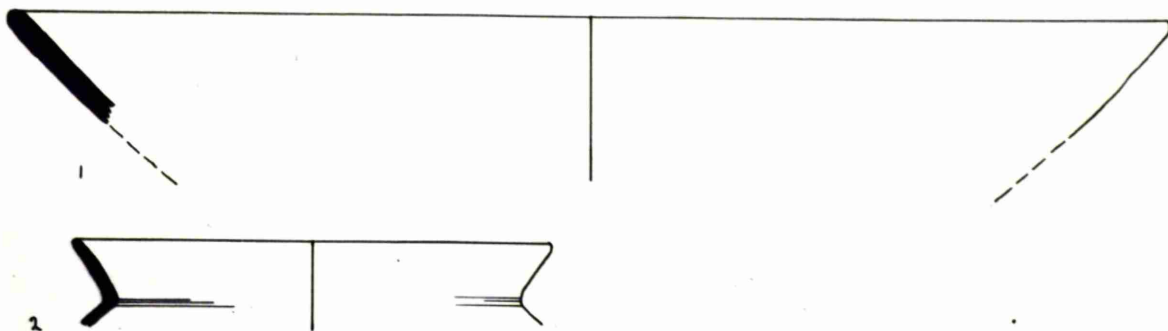
83. Site 57 - Rodalkunda.

- A.1. ware (2a not drawn).
- A.2. " 1 (1a, 1b not drawn), 2.
- B.1. " 6, 8.
- B.2. " 3, (3a not drawn), 4 (4a not drawn).
- B.3. " 5, 7.

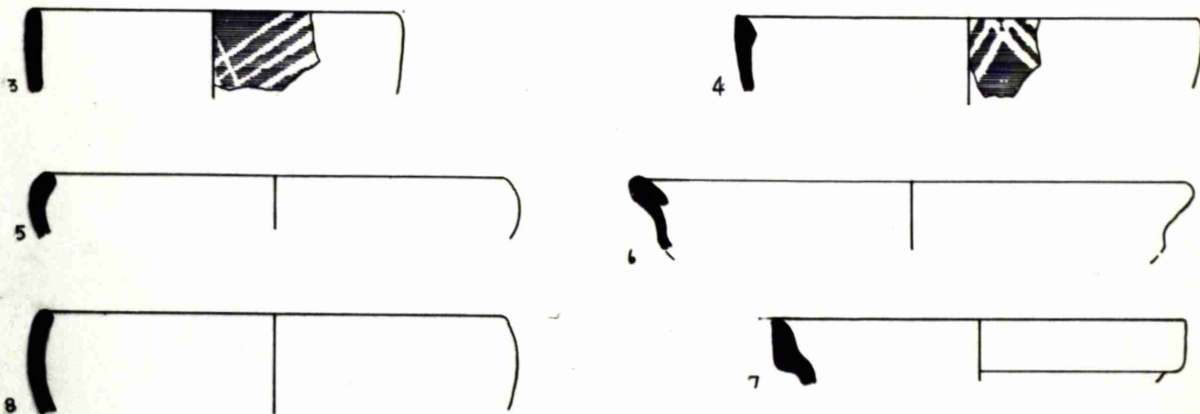
Site 94 - Shlvapur.

- A.1. ware 7.
- B.1. " 1 - 6.
- D. " 8 - 13.

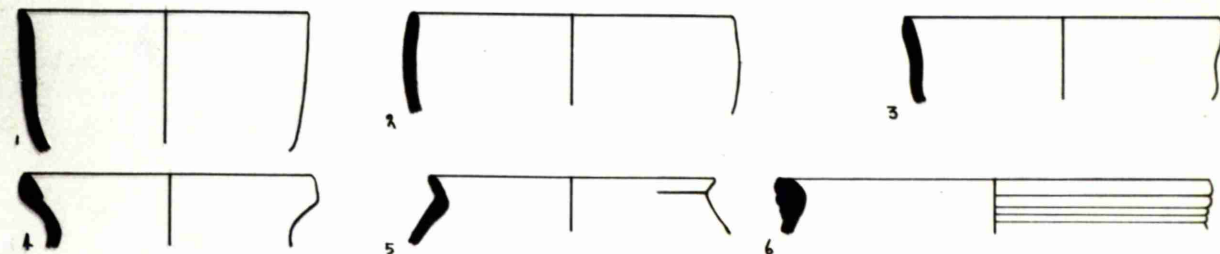
A



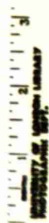
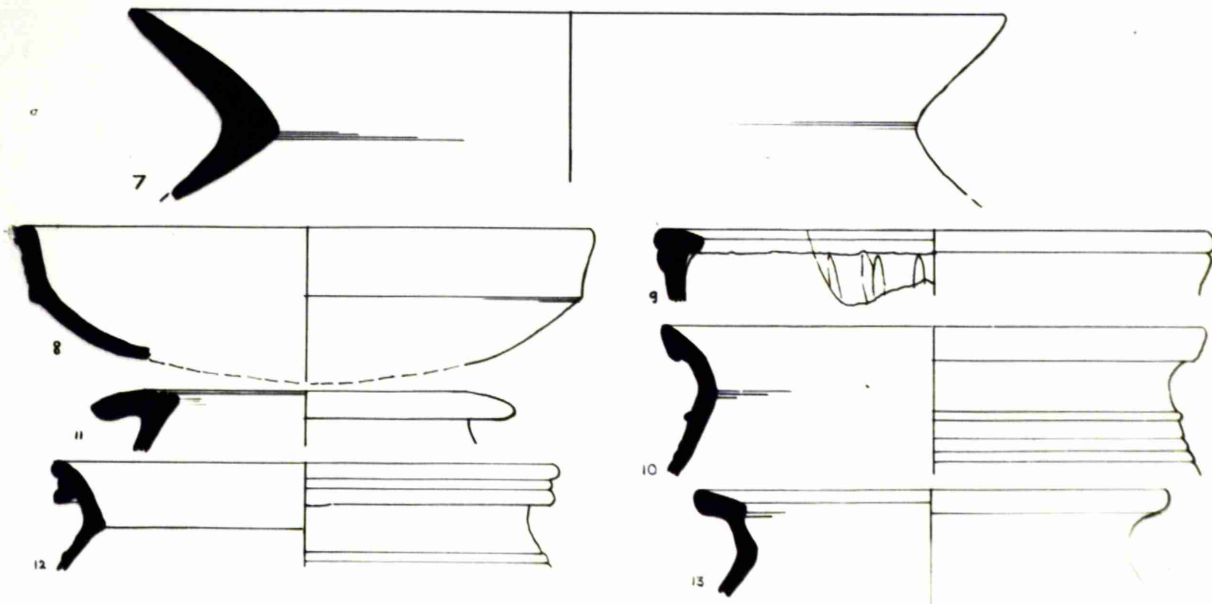
B



B



D



84. Site 59 - Sirwar.

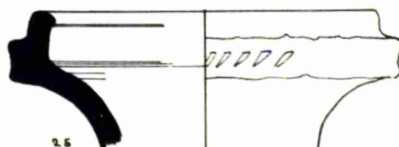
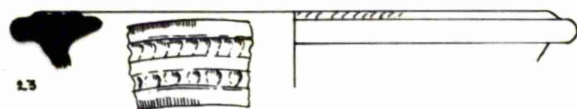
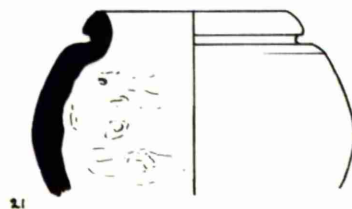
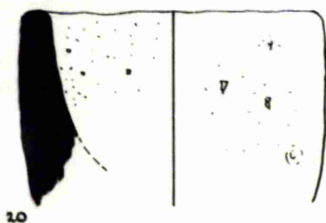
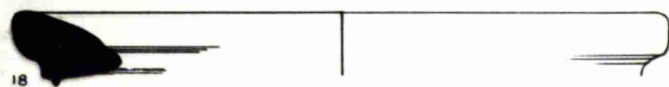
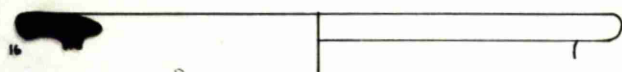
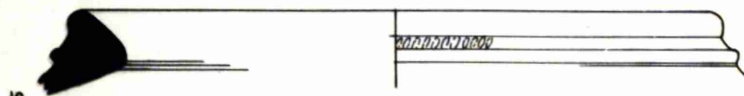
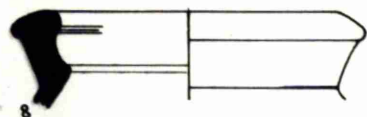
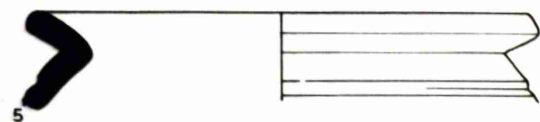
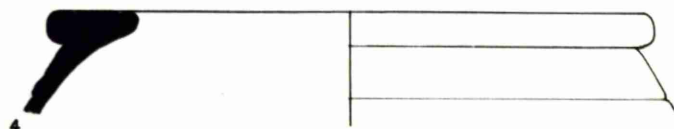
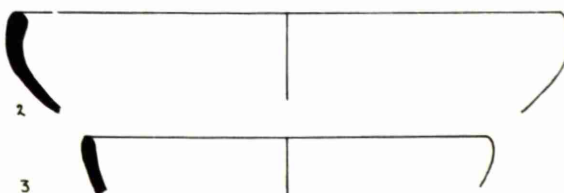
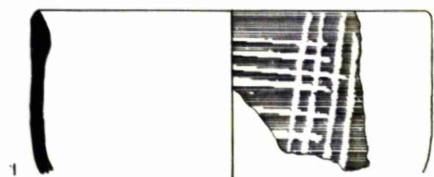
B.2. ware 1.

B.3. " 2 - 19, 21.

B.4. " 22.

D. " 23 - 5.

(Nos. 4 - 13 are of thin, poorly surfaced, red ware and seem to mark the last stages of the B. ware period. Nos. 14 - 19 are in thin blackish slipped ware with crackle surface, and appear to mark the natural transition of the B - D. wares).



85. Raichur A. wares: Synoptic Morphology.

(Drawing.)

A/

al. 1(a)

1a

al. 1(b)

1b

al. 1

1c

al. 1

1d

al. 1

1e

al. 1 (b)

1f

al. 1

1g

al. 1

1h

al. 1 (b)

1i

al. 1 (b)

1j

al. 1 (b)

1k

al. 1

1l

al. 1

1m

al. 1

2a

al. 1

2b

al. 1

2c

al. 1

2d

al. 1

2e

al. 1

2f

al. 1

2g

al. 1

2h

al. 1

2i

al. 1

2j

al. 1

2k

al. 1

3a

al. 1

3b

al. 1

3c

al. 1

3d

al. 1

3e

al. 1

3f

al. 1

3g

al. 1

3h

al. 1

3i

al. 1

3j

al. 1

3k

al. 1

4a

al. 1

4b

al. 1

4c

al. 1

4d

al. 1

4e

al. 1

4f

al. 1

4g

al. 1

4h

al. 1

4i

al. 1

4j

al. 1

4k

al. 1

5a

al. 1

5b

al. 1

5c

al. 1

5d

al. 1

5e

al. 1

5f

al. 1

5g

al. 1

5h

al. 1

5i

al. 1

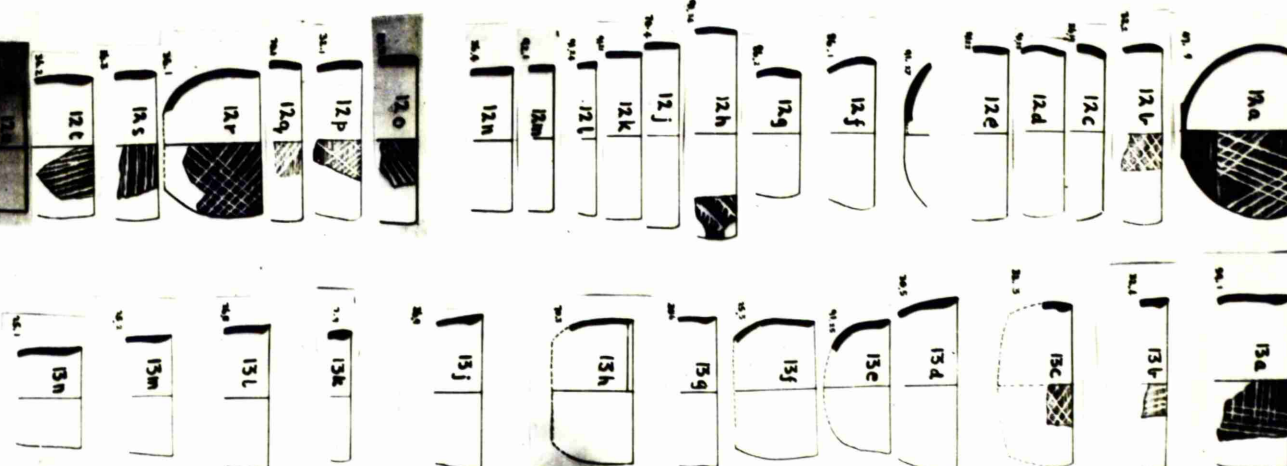
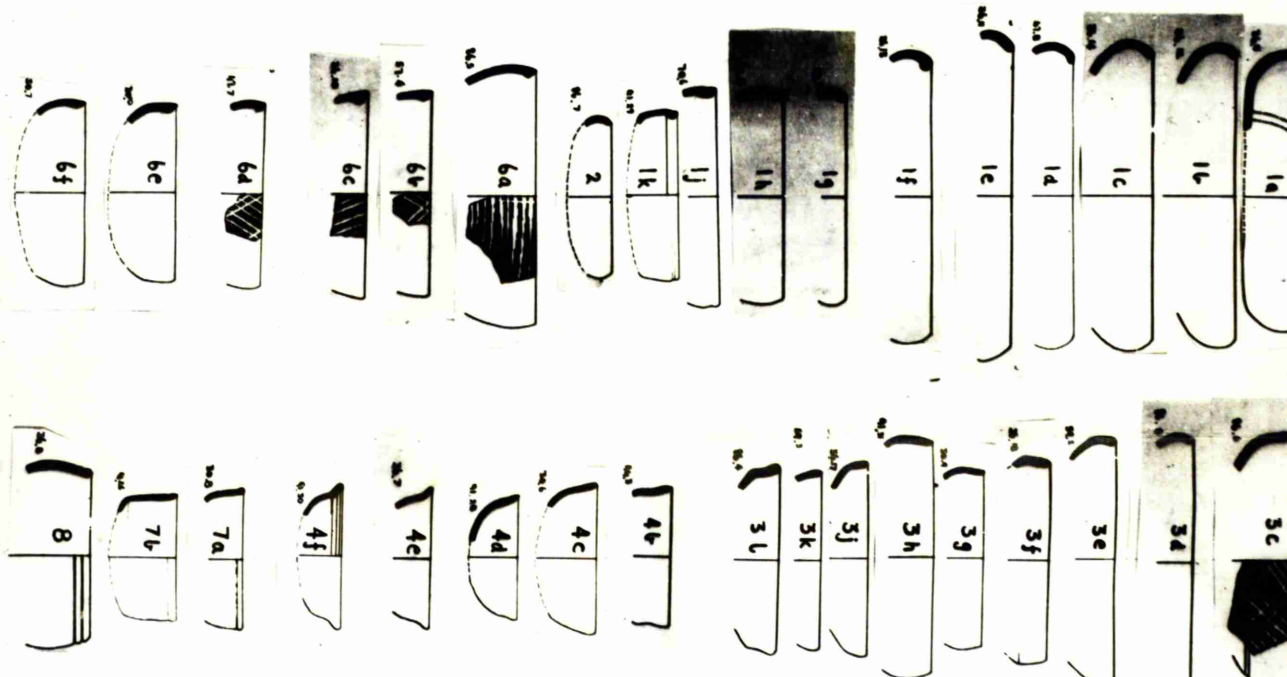
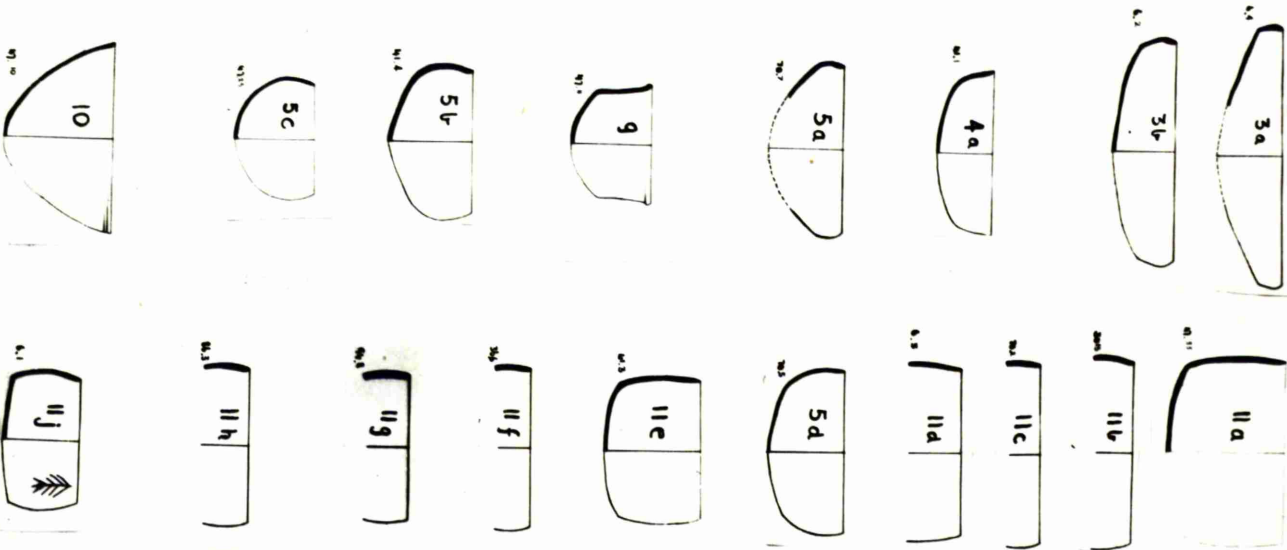
5j

al. 1

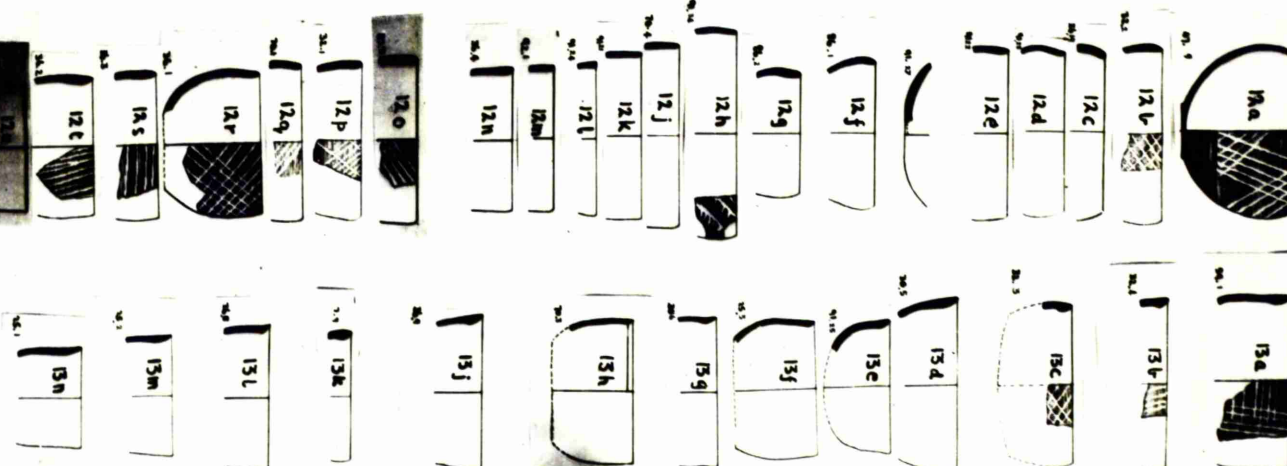
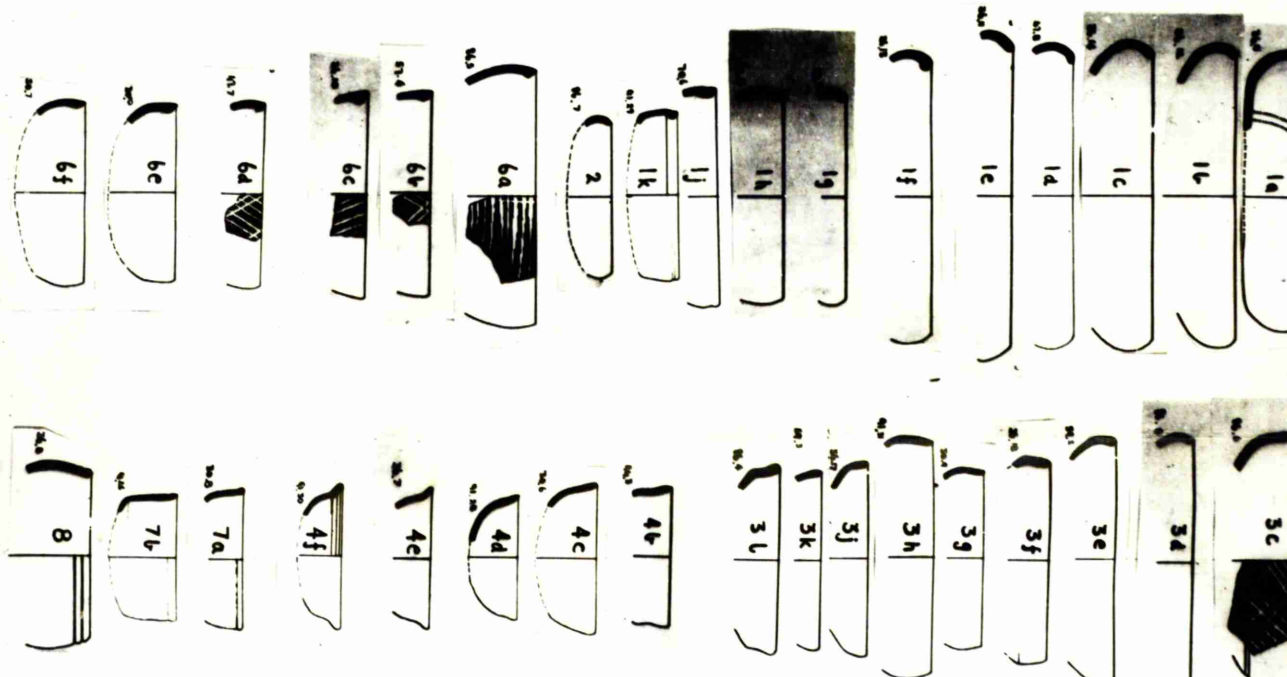
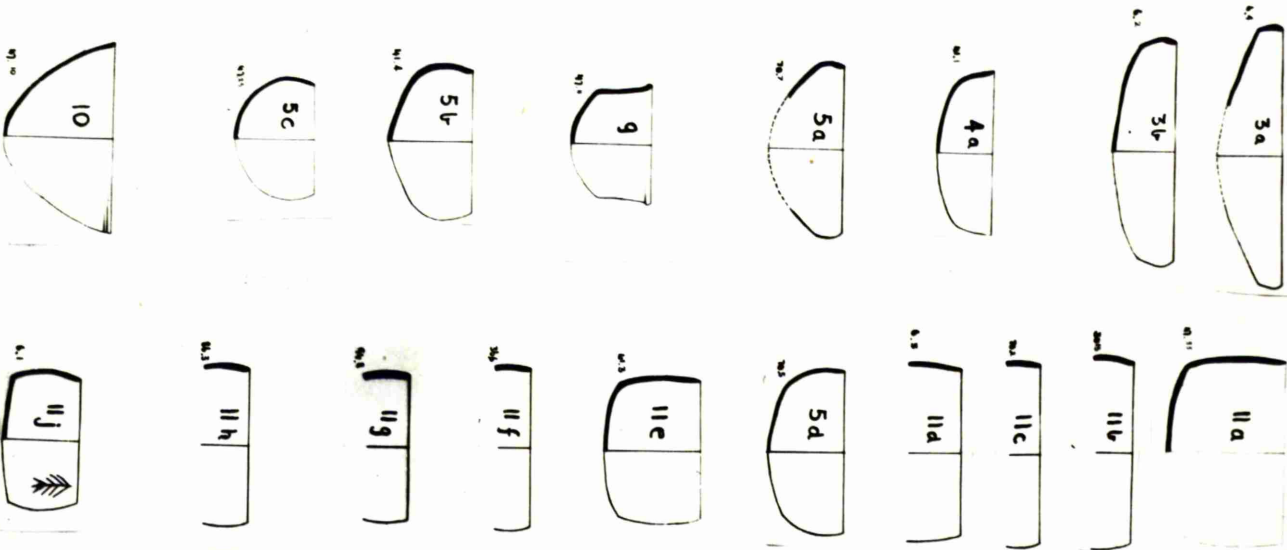
5k

ALPHABET FOR THE BLIND - 1919

86. Raichur B wares: Synoptic Morphology. (1)
(Drawing).

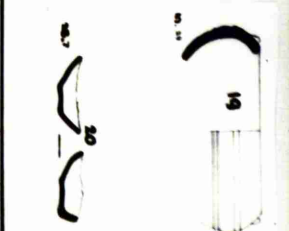
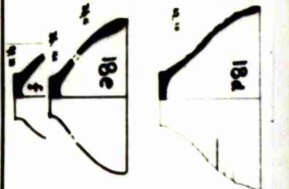
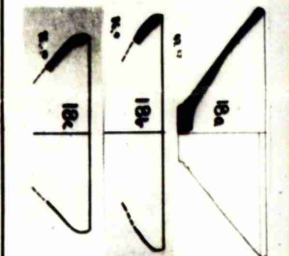
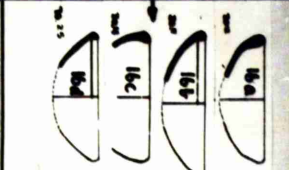
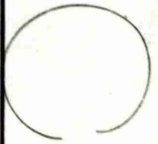
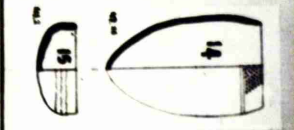


SCALE OF INCHES

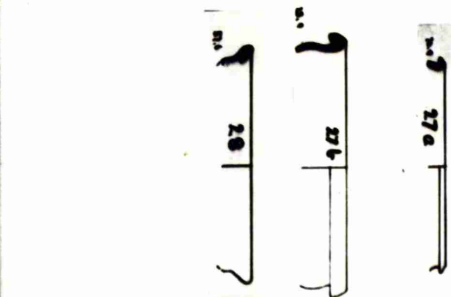
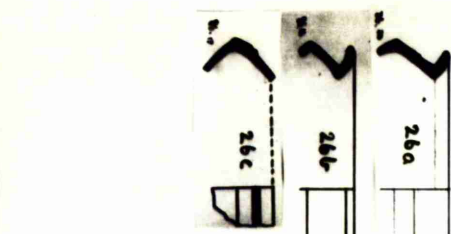
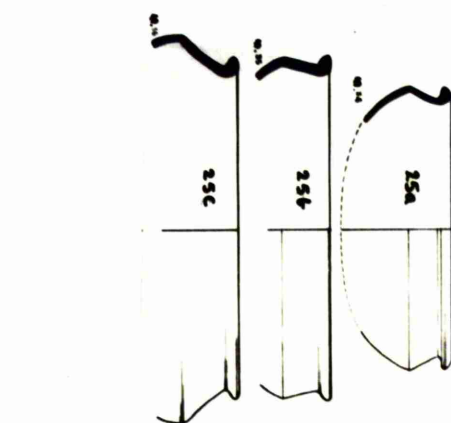
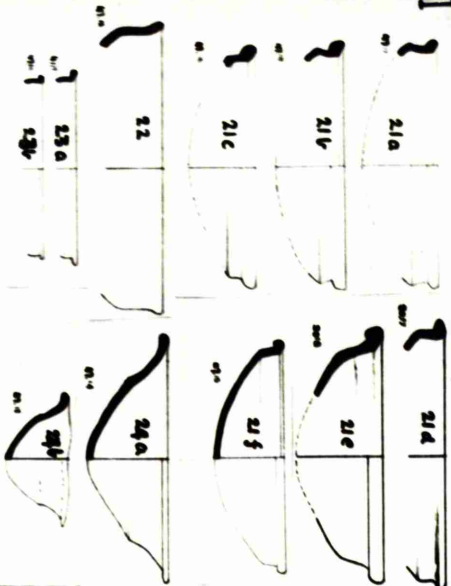


87. Raichur B. wares: Synoptic Morphology (2)
(Drawing).

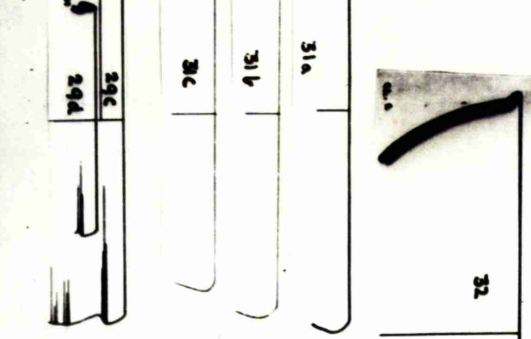
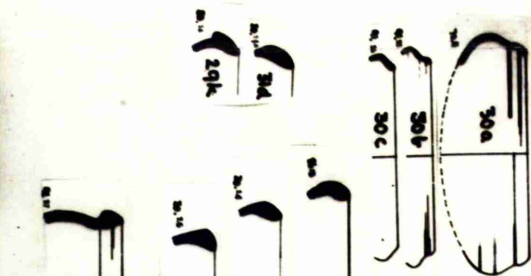
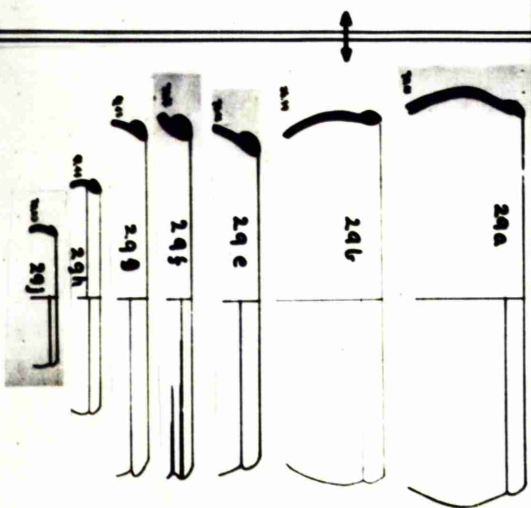
II



III



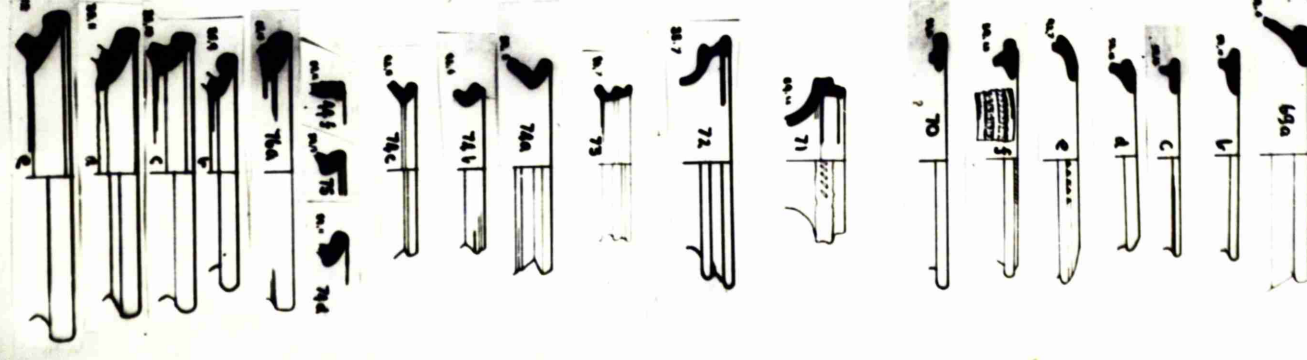
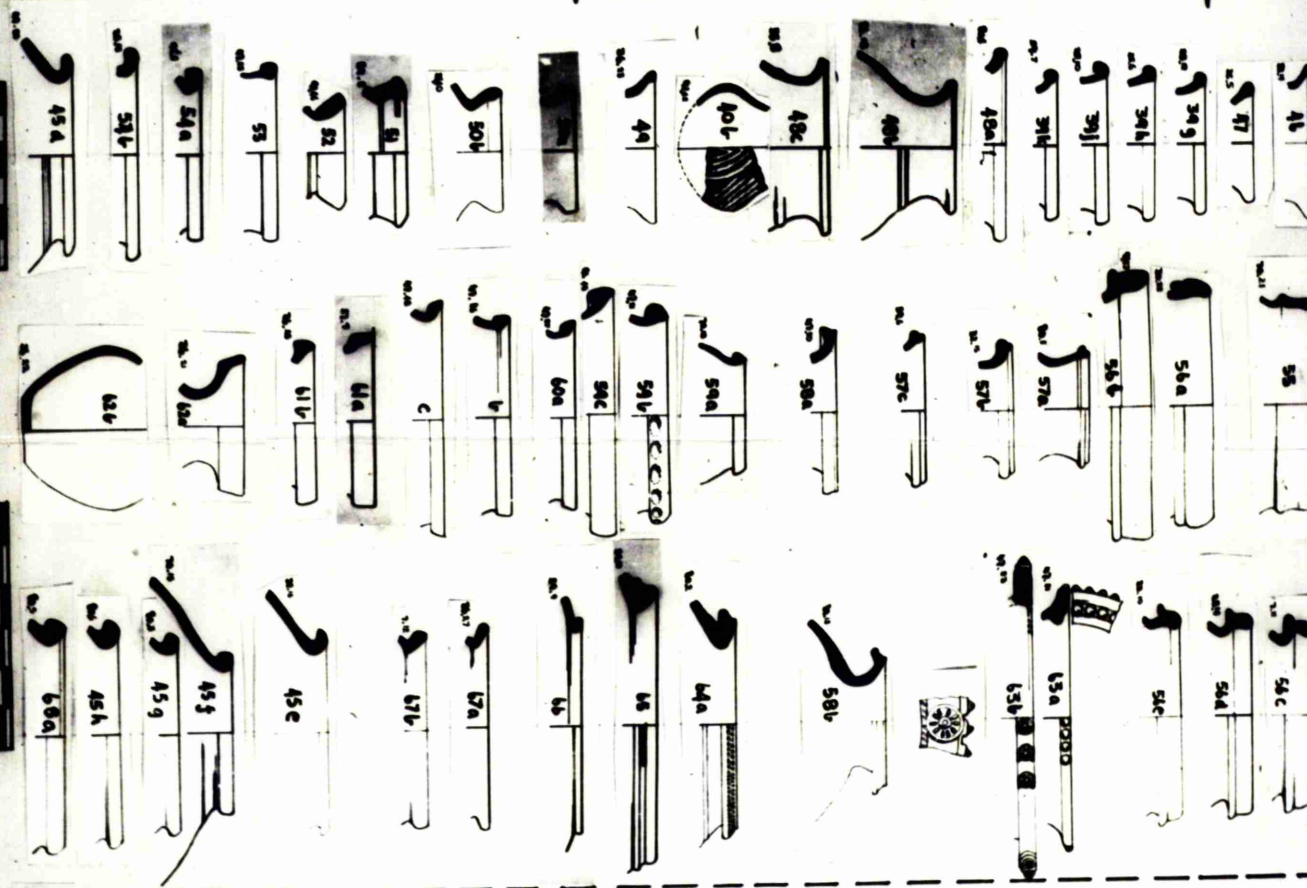
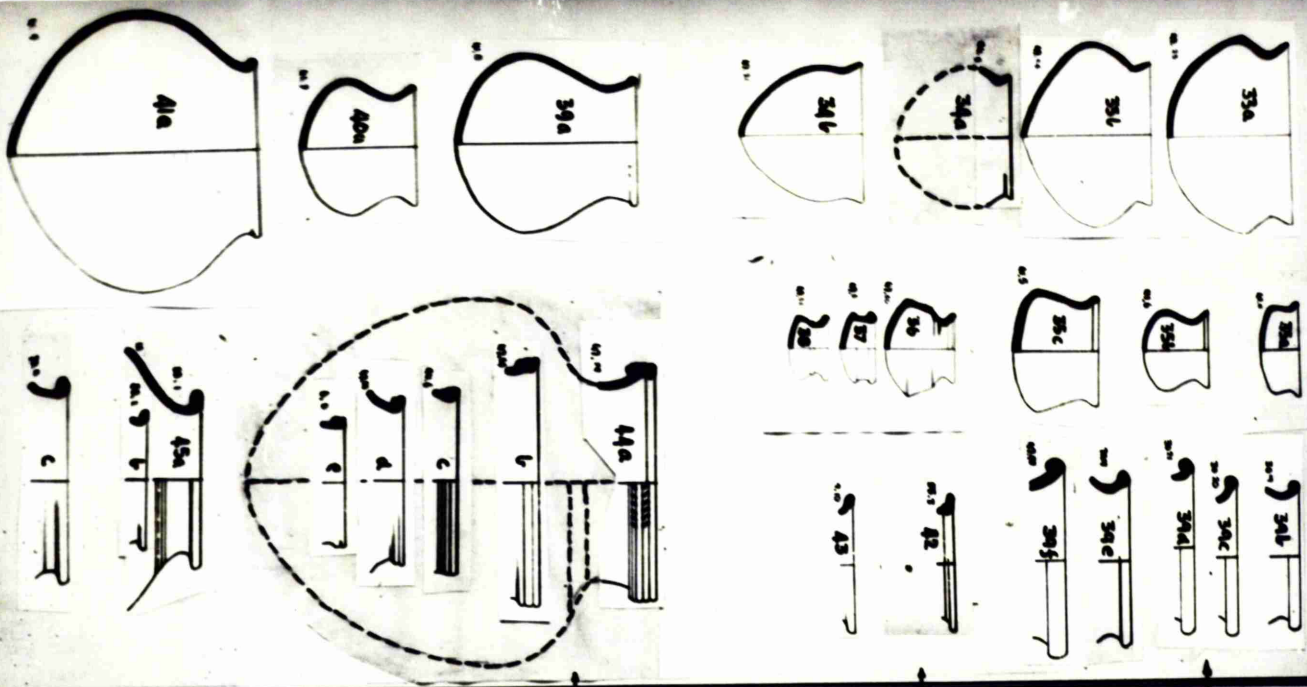
IV



SCALE OF INCHES

88. Raichur B. wares: Synoptic Morphology, (3)
(Drawing).

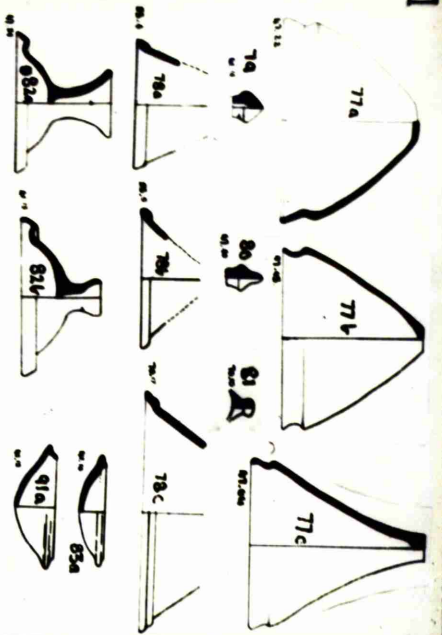
V



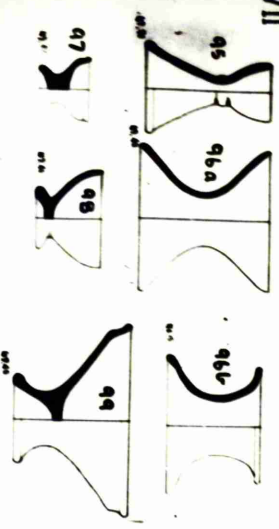
SCALE OF INCHES EXCEPT FOR 25-35-45
SCALE OF INCHES FOR 25-35-45

89. Raichur B. wares: Synoptic Morphology (4)
(Drawing).

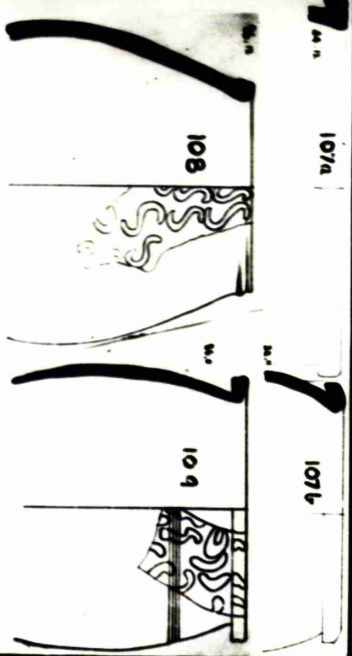
VI



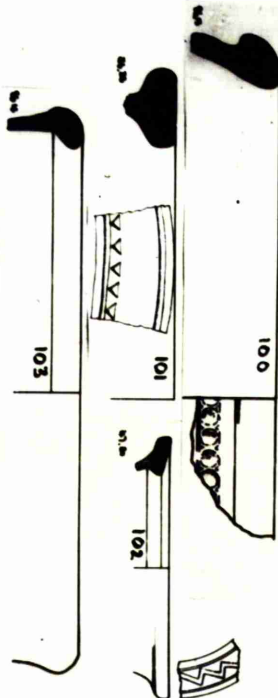
VII



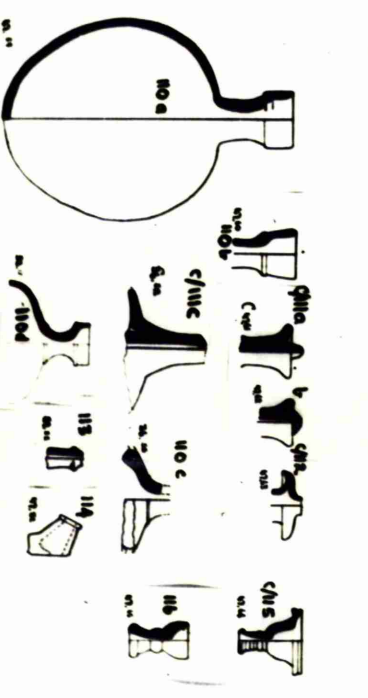
IX



VIII

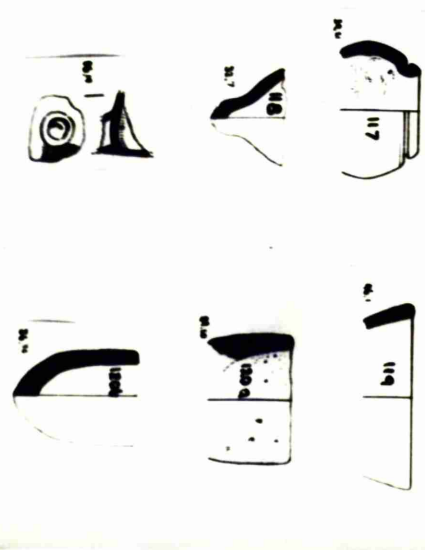
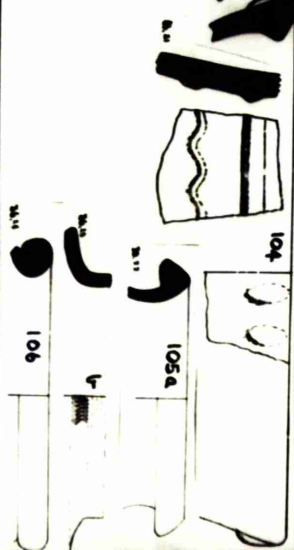
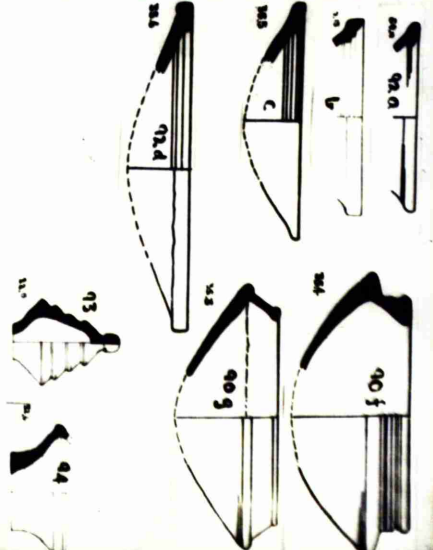


IX



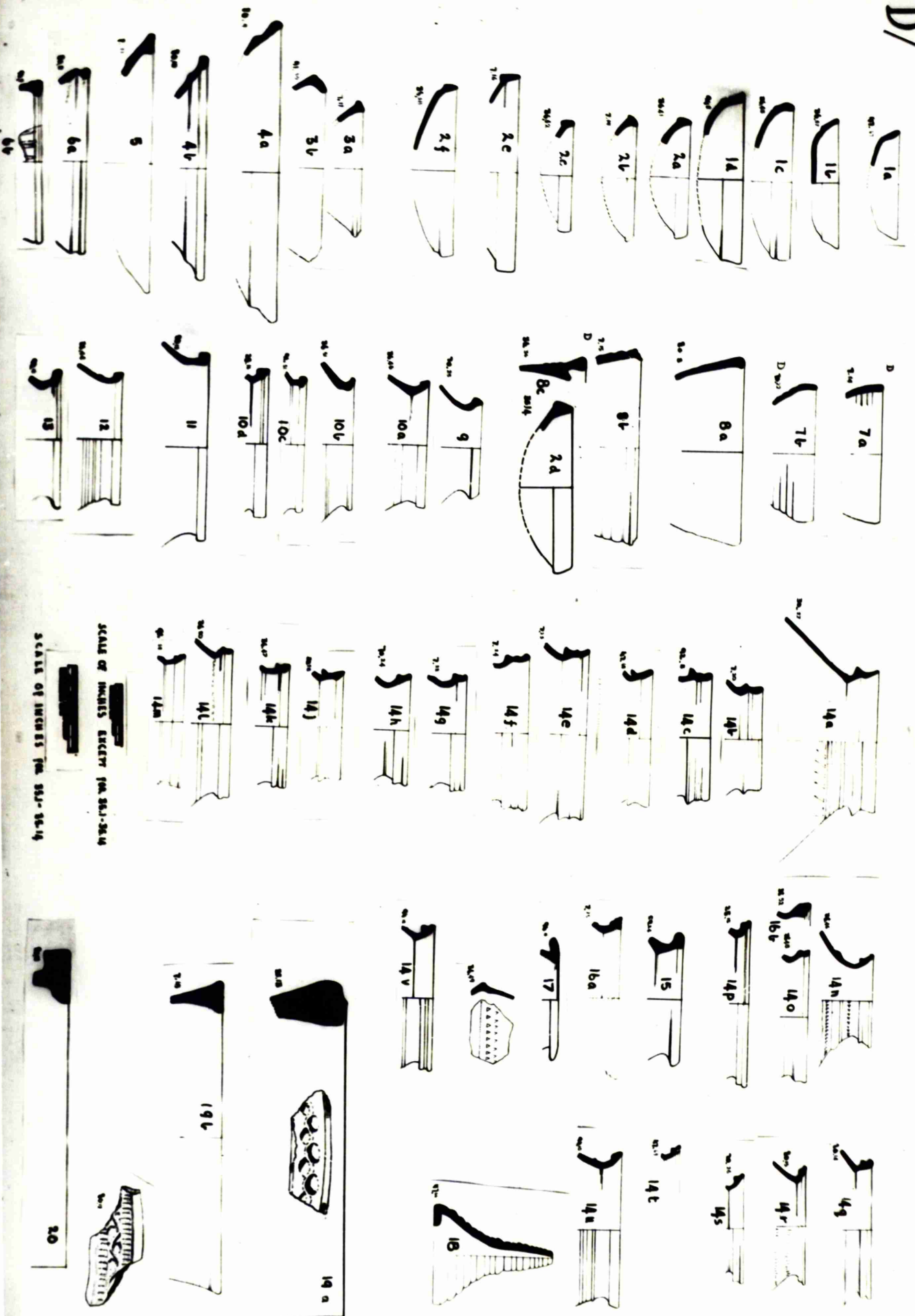
SCALE OF INCHES EXCEPT FOR 100-104
SCALE OF INCHES FOR 100-104

X



90. Raichur D. wares: Synoptic Morphology
(Drawing)

D/



91. a) B.I. ware vessels from Sultan
Mohammed's Field, Maski; now
in the Maski Museum.

See. Pl. 77 Nos. 10,11,13,14 and 15.

Pl. 78 Nos. 21,22 and 24.

b) A.5. and B.I. ware vessels from
the same provenance.

See. Pl. 77 No. 2.

Pl. 78 No. 24.

Pl. 79 Nos. 43,44,45 and 47.



92. a) Vessels from the Maski Excavations,
now in the Maski Museum.

See Pl. 77, No. 1;
Pl. 80, No. 59.

b) Sherds of B.2. painted ware from the
Benkal forest (Site No. 6) now in the
Maski Museum.



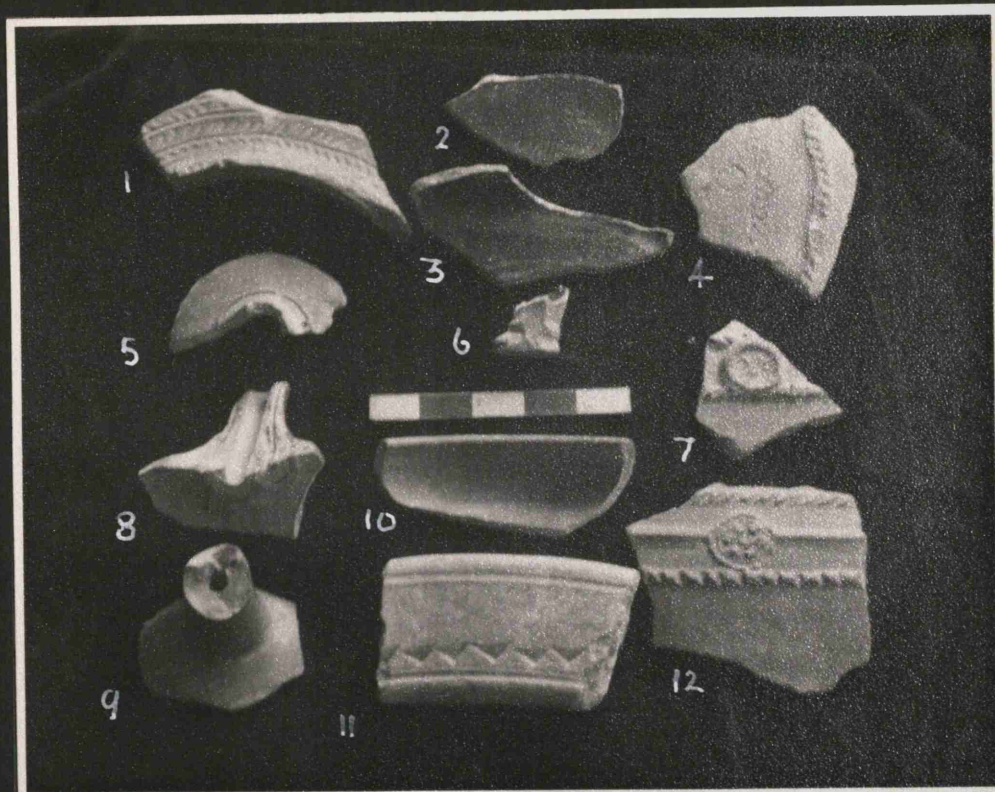
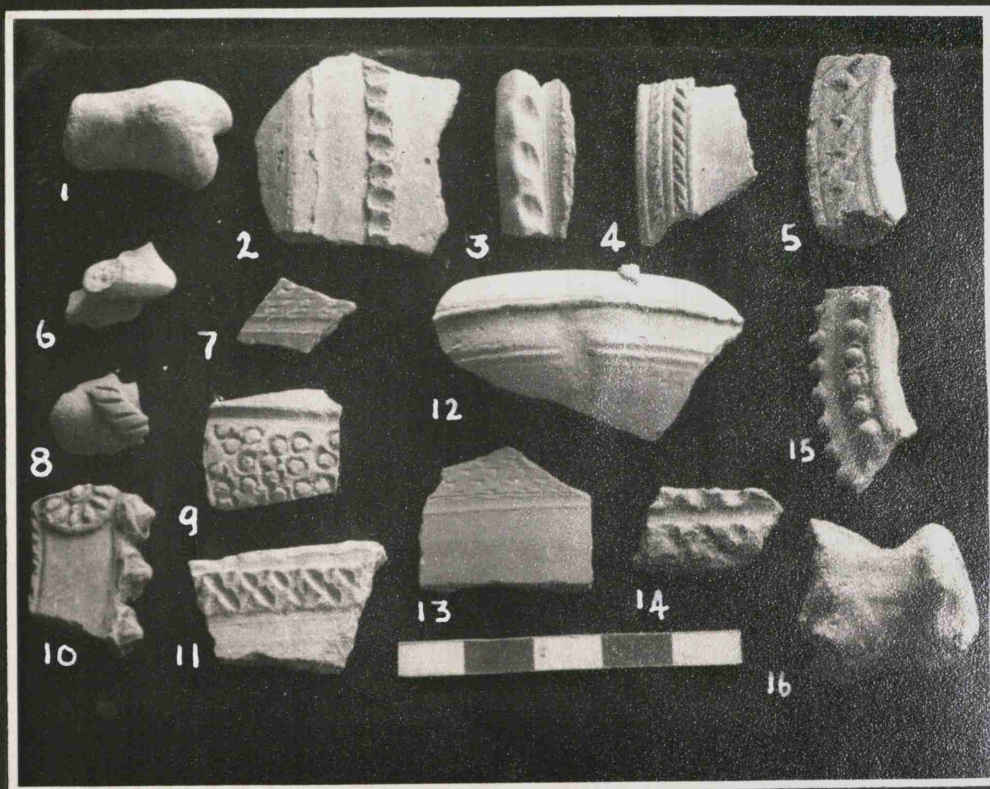
Pl. 93.

a) Maski: terracotta fragments and decorated sherds. (Photos.)

1. See Pl. 94, No.6. (47.85).
2. Sherd of B.3. ware with finger tip impressed fillet.
3. Rim of B.3. ware with finger tip impressions.
4. See Pl. 81, No.79.
5. See Pl. 81, No.80.
6. See Pl. 94, No.3. (47.84).
7. Sherd of B.3. ware with incised decoration (47.93).
8. Fragment of terracotta figure of B.4. ware (47.86).
9. Sherd of B.3. ware with circular incisions (47.92).
10. See Pl. 81, No.83.
11. Sherd of B.3. ware with cross impressed decoration (47.94).
12. See Pl. 78, No.29.
13. Sherd of B.3. ware with incised decoration (47.91.)
14. Sherd of B.3. ware, thumb impressed decoration (47.90).
15. See Pl. 81, No.81.
16. Head of elephant, red slipped B.3. ware (47.89).

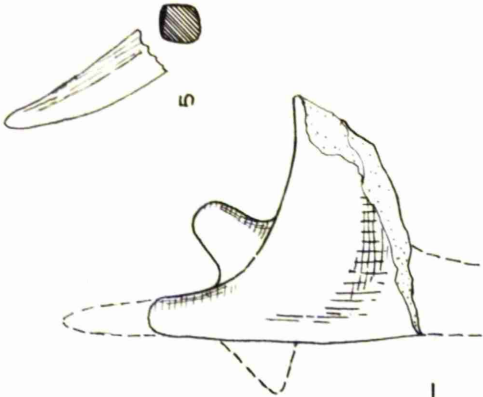
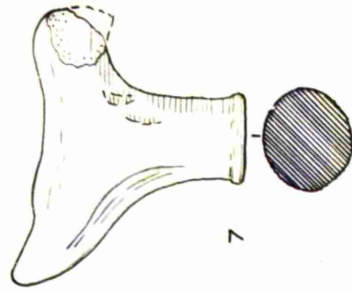
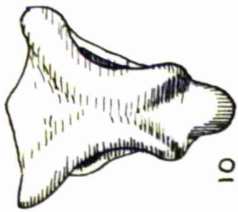
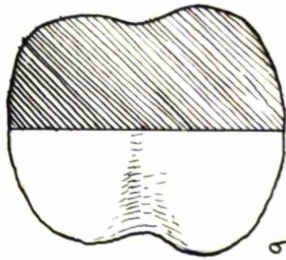
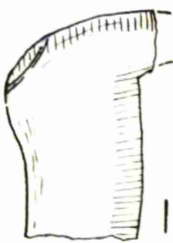
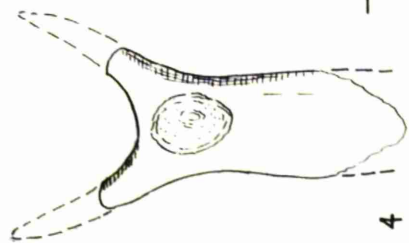
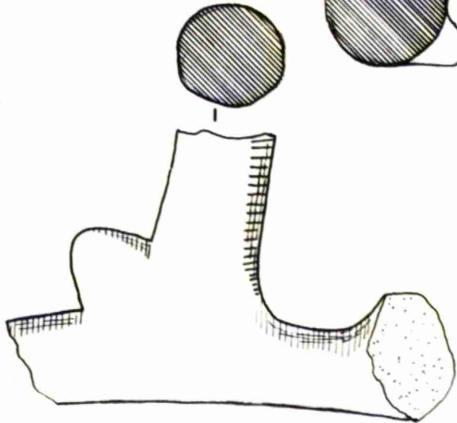
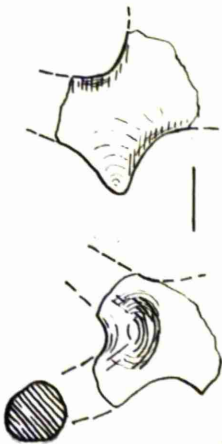
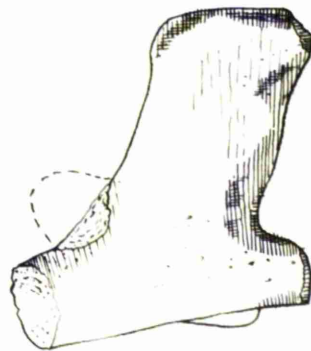
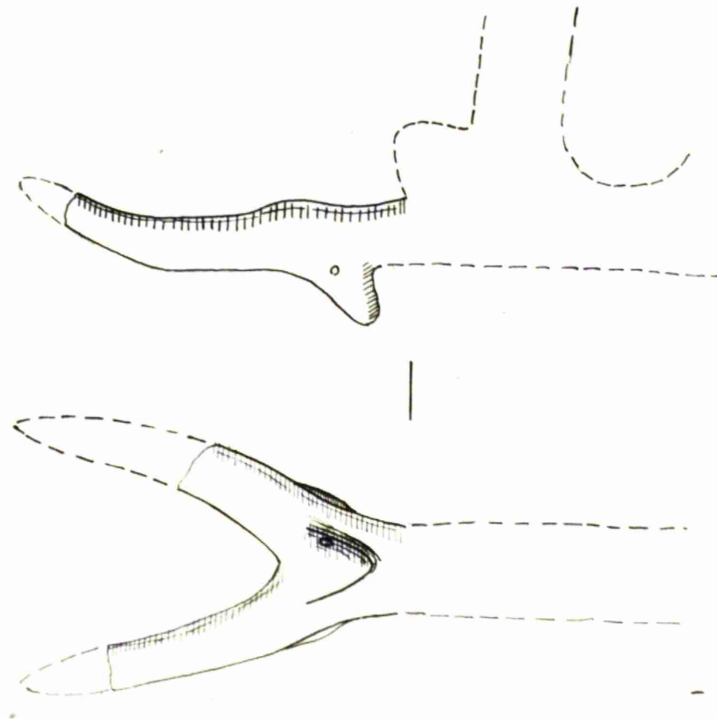
b) Kopbal: decorated sherds etc. (Photos.)

1. Sherd of B.3. ware with incised decoration (36.57).
2. See Pl. 71, No.36.15a.
3. See Pl. 71, No.15.
4. Sherd of B.3. ware with impressed decoration (36.56).
5. See Pl. 72 No.33.
6. Hollow foot of moulded G ware terracotta (36.53).
7. Sherd of B.3. ware with pressed applique wheel decoration. (36.54).
8. See Pl. 72 No.36.32a.
9. See Pl. 72 No.32.
10. See Pl. 71, No.12.
11. See Pl. 72, No.35.
12. Sherd of B.3. ware with impressed rosette decoration. (36.55).



Pl. 94. 'A' ware terracottas from Raichur (Drawings).

1. Head and neck of (humped) bull with tips of horns broken. In fine buff ware with red surface. (Piklihal Excavations. Site VIIA (10) Neolithic A).
2. Neck, hump and part of trunk and forelegs of a similar figure, of similar ware to 1. The legs are treated as a single unit. (Provenance same as 1).
3. Head of a ? humpless bull with horns broken. Ware similar to 1. (Found by Capt. Munn at Maski, and here reported and illustrated for the first time. At present in the S.O.A.S., London).
4. Part of horns, hump and torso of bull, of coarse, ill fired, grey ware. The head has become detached, and the hump is also loose, leaving typical scars. The modelling of this specimen is much less definite than that of 1 and 2. ? Neolithic A - B. (Piklihal Surface find, Area B., at present in the S.O.A.S., London).
5. 'Horn' or leg of stand of similar ware to 1 and 2 above. (Piklihal Excavations, Site VII (10); Neolithic A, at present in the S.O.A.S., London).
6. Hind quarters of an animal (?) pig, of unevenly fired buff/grey (A.1.) ware. The tail is treated in a distinctive manner. (Found by Munn at Maski, similar to 3.)
7. Model (?) bird in grey/buff, (A.1.) ware. Surface find at Piklihal. (At present in the S.O.A.S., London).
8. Part of humped bull. The hump is missing but the scar is visible (compare No.4). The forelegs are separated. Dull red (?A) ware. (Found by Lake at Maski, and recorded by Bruce Foote. Catalogue Raisonne No.2783.87. Drawing supplied by courtesy of the Superintendent, Madras Museum).
9. (?) Potters dabber, (compare Pl.61 No.20) of dark earthenware. (Found by Bruce Foote at Billamrayan Gudda, and recorded I.P.P.A. No.2633.2. Pl.60).
10. 'Boukranion' in grey earthenware. (Provenance as for 9.).

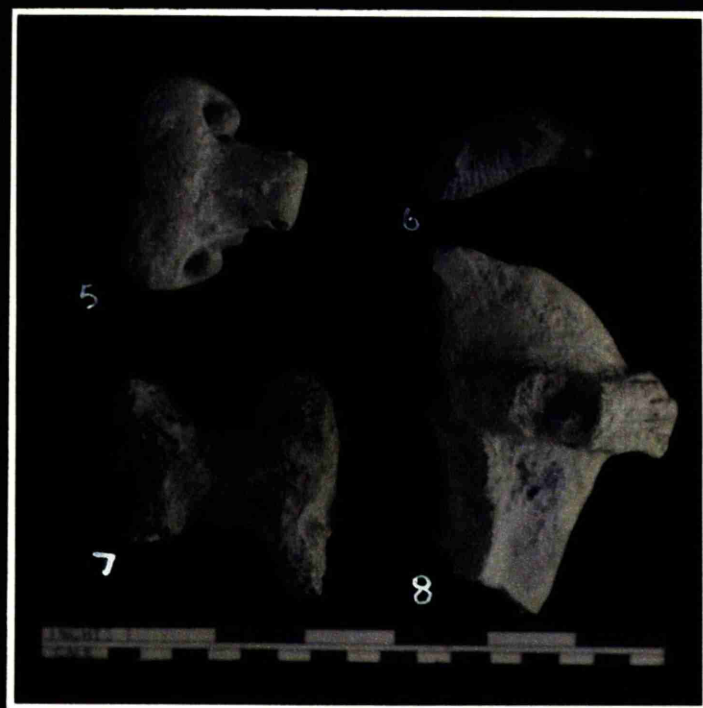


95. a) Miscellaneous terracottas from Maski Museum. (Photo.)

1. B. ware head, moulded, with chunam wash and ochre paint outlining eyes, head etc.)
2. B. ware head, moulded, with traces of chunam wash.
3. Arm of similar ware.
4. Head of similar ware.

b) Animal terracottas from Maski Museum (Photo.)

5. Head of Buffalo, buff ware ?A or B.
6. Head of sheep (?) B ware.
7. Lion of B.4. ware.
8. Object, ware not noted.



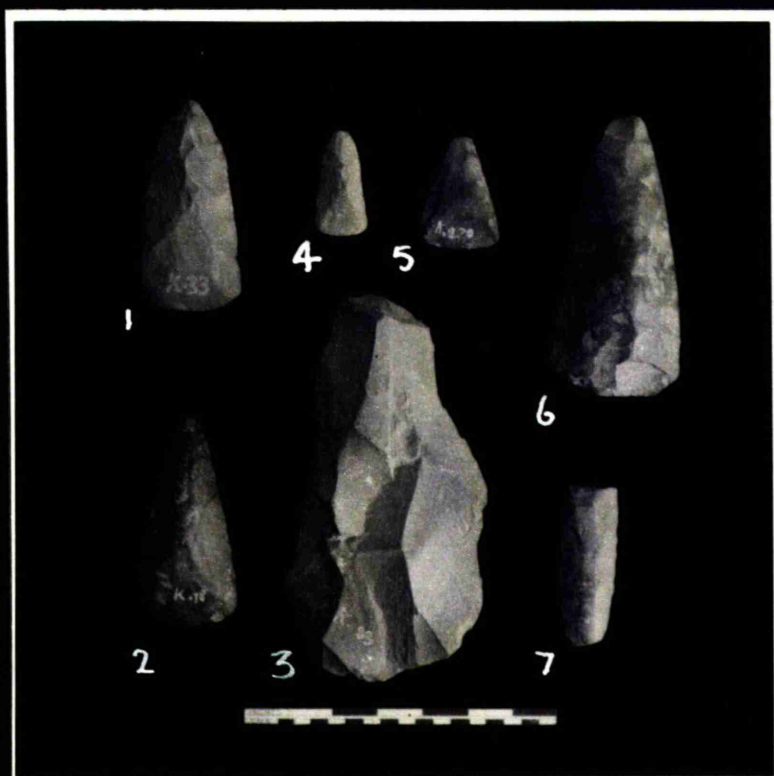
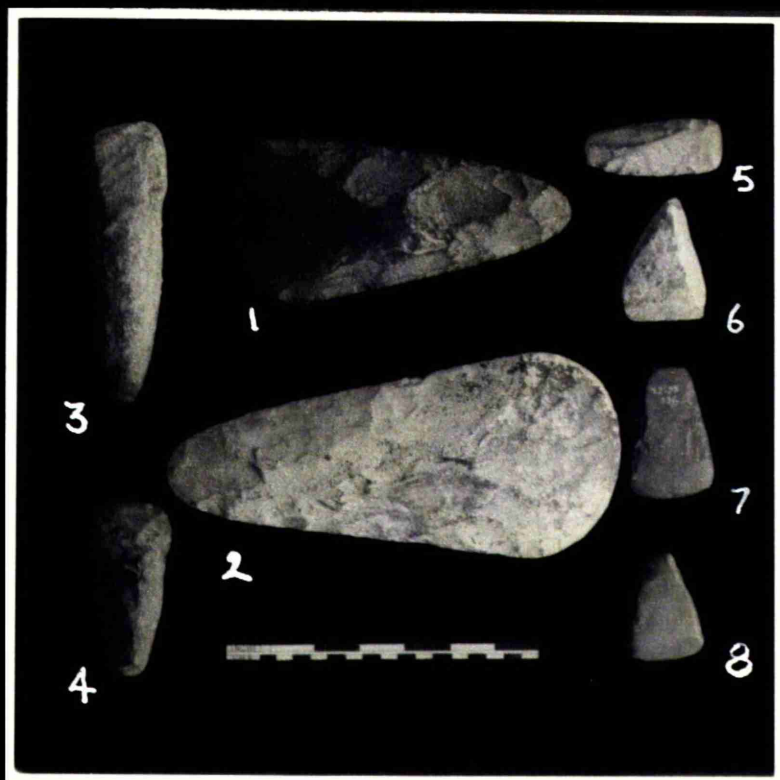
Pls. 96-106. Stone Artifacts.

96.a) Polished axes and chisels from Maski (Maski Museum). All of dolerite except 3.

1. Large axe, polished curved blade and body part polished.
2. Large axe, curved blade.
3. Chisel of pecked diorite.
4. Medium-small axe, blade polished.
5. Small chisel with squared blade.
6. Small flat axe with straight ground blade.
7. Small flat axe partly polished.
8. Small flat axe polished all over.

b) Polished axes and chisels, from Billamrayan Gadda (Maski Museum). All of dolerite.

1. Medium-large axe polished blade.
2. Medium-large axe part polished.
3. Roughed out block.
4. Small axe, polished blade.
5. Small flat axe polished almost all over.
6. Medium-large axe partly polished.
7. Chisel, partly polished.



97. Piklihal - Site VIII.

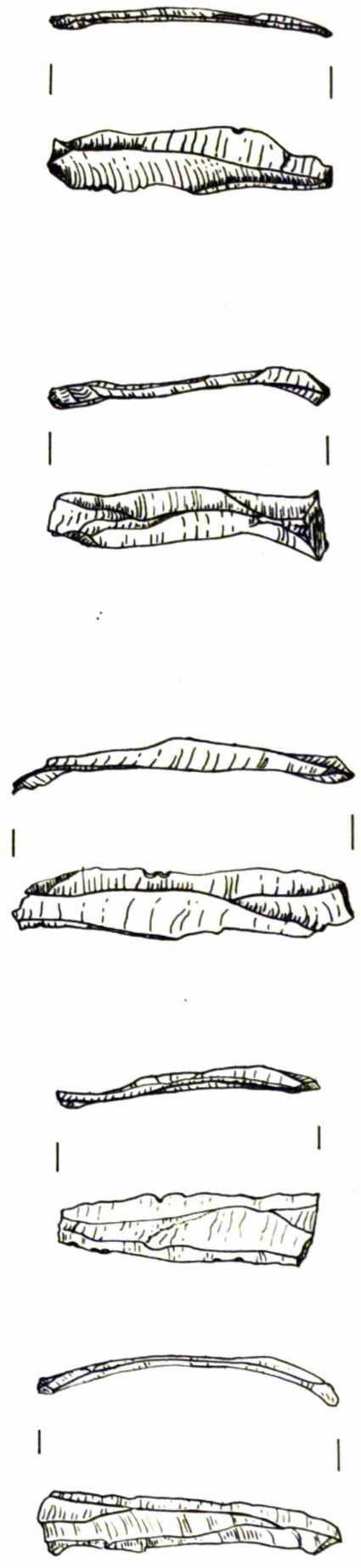
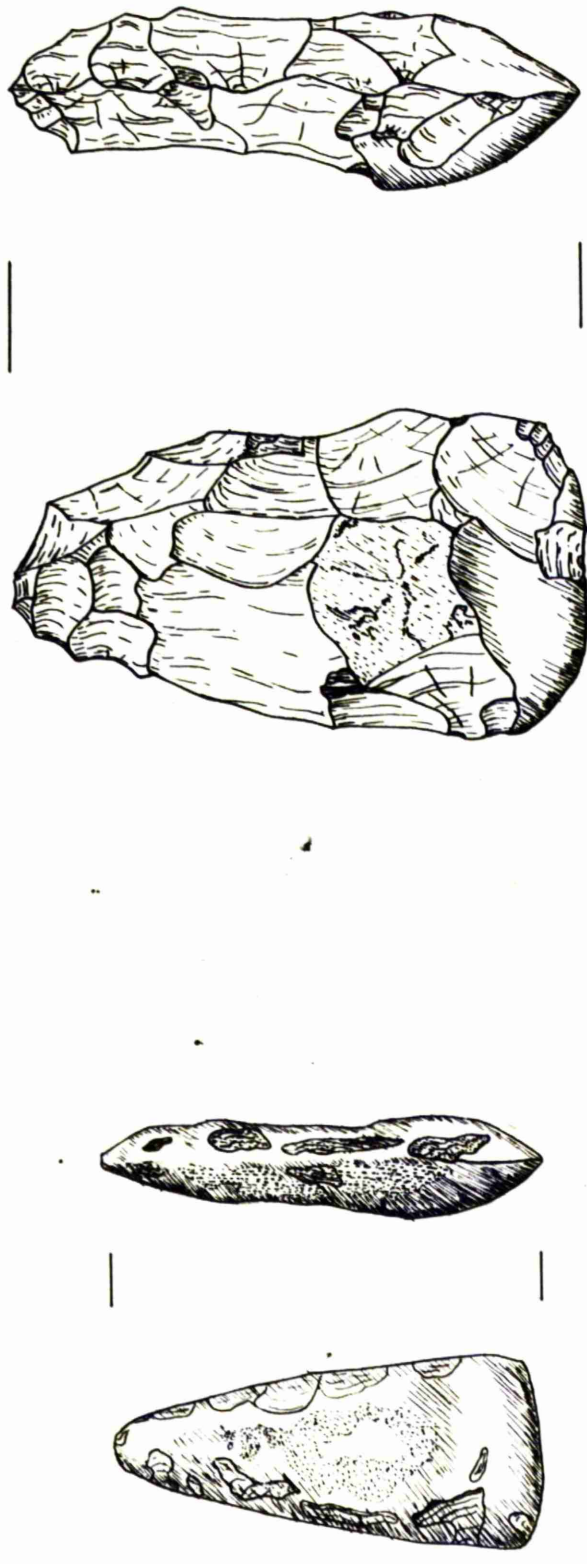
Polished Axes and Chert Blades from Burial in (4)

Top L.H. Medium-small axe of
dolerite, polished all over.

Top R.H. Medium-large axe of
dolerite, blade only polished,
heavily used.

Bottom row. 5 chert blades, all used,
2 $\frac{3}{4}$ "-4" in length.

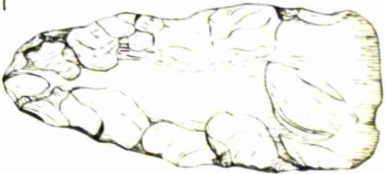
PIKLIHAL 1952 : SITE VIII (FINDS FROM BURIAL-LAYER 4)



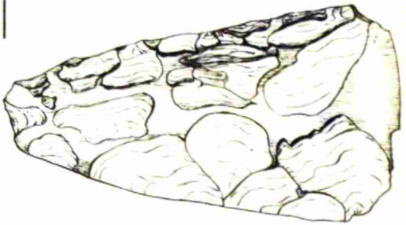
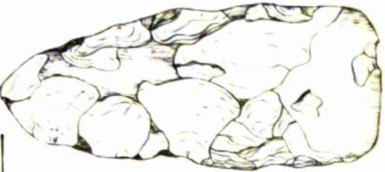
98. Piklihal, Surface Collection.

Polished axes all of
dolerite.

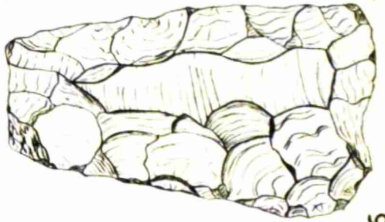
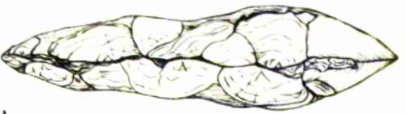
1. Large, polished and curved blade.
2. Large, unpolished, ? unfinished.
- 3 & 4. Medium-small, partly polished, used.
Roughly squared blade.
5. Medium-small, unpolished, ? used, squared
ends.



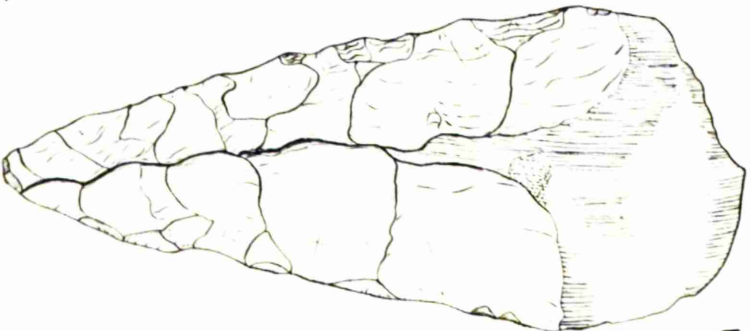
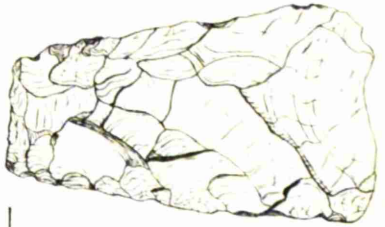
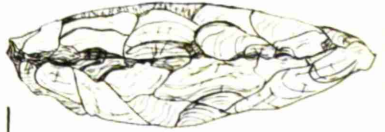
3



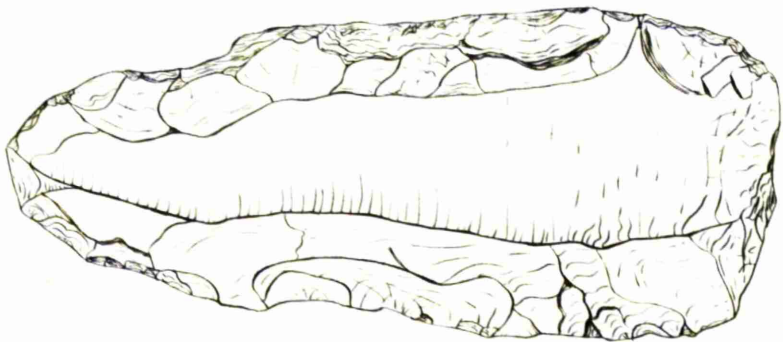
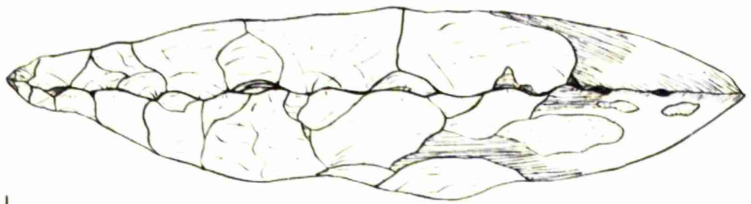
4



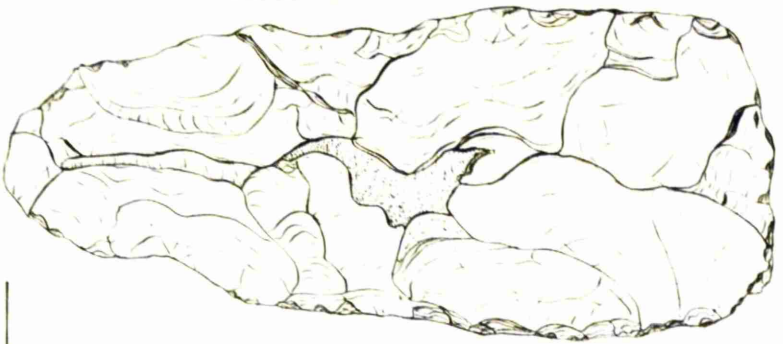
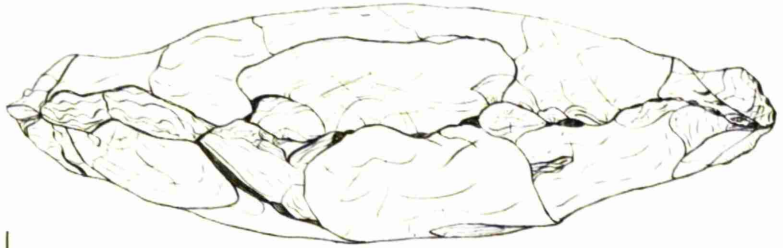
5



1

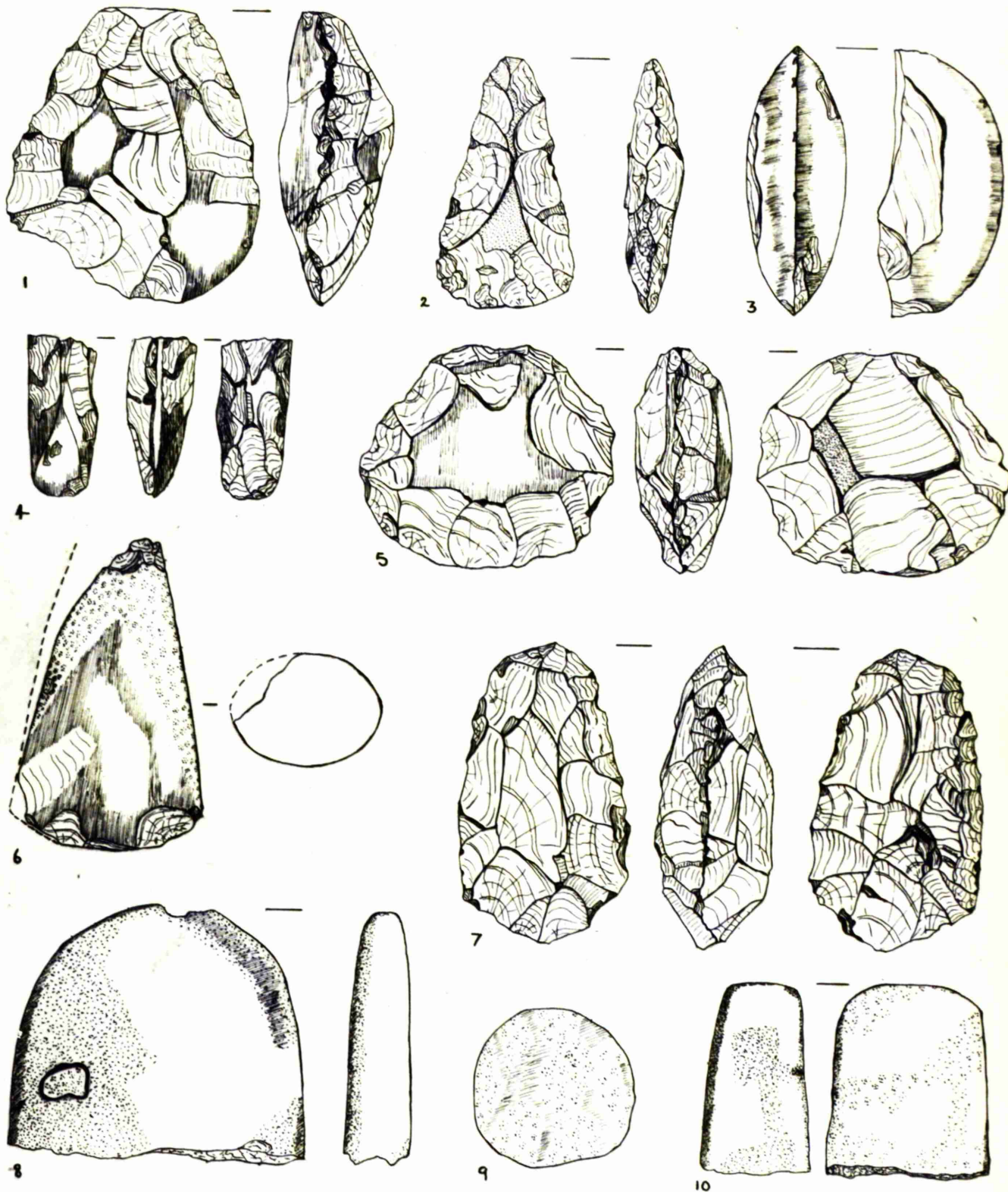


2



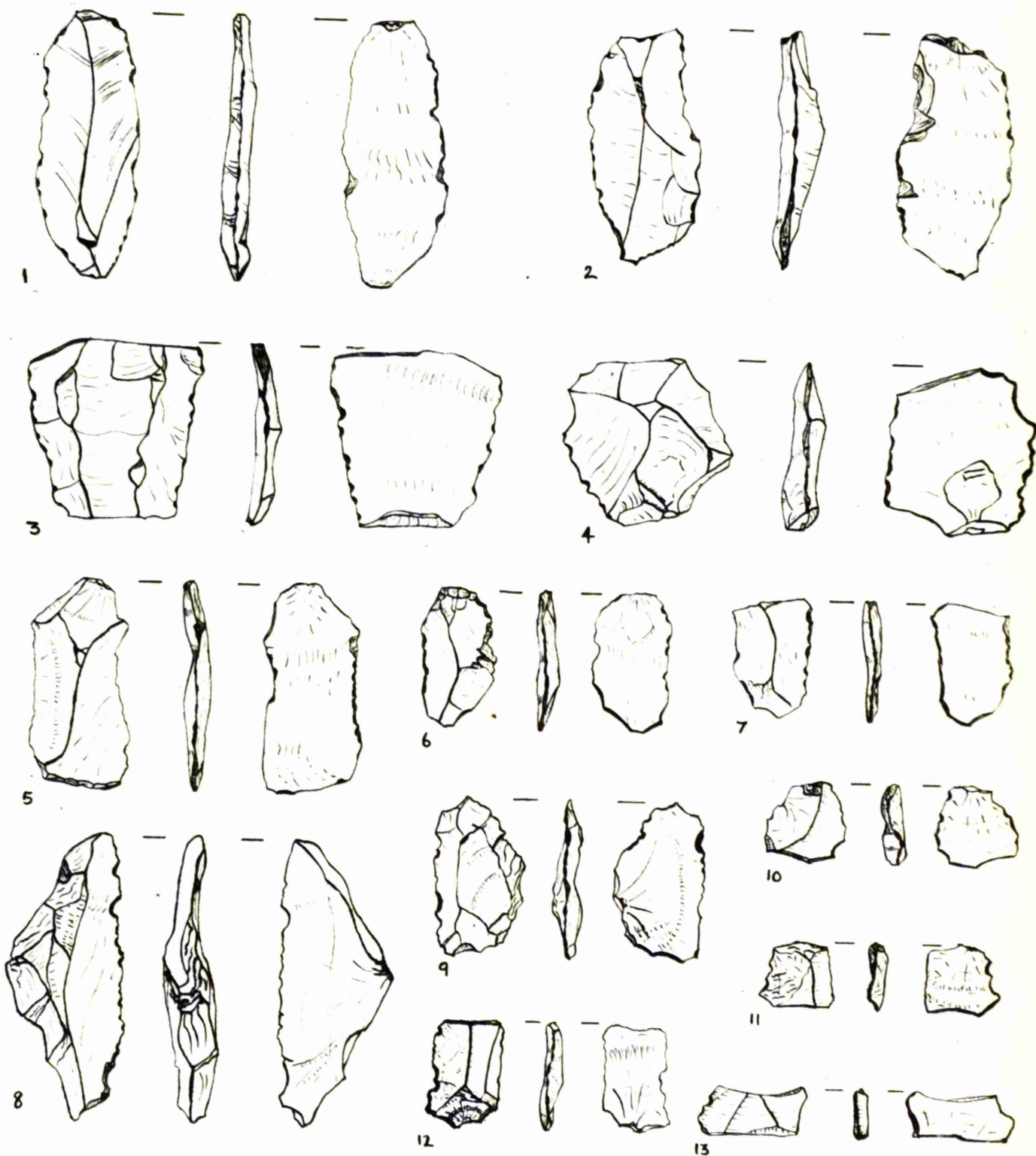
99. Piklihal, Surface collection. Polished and pecked stone artifacts.

1. Medium-small axe or adze with much curved blade (L. 4", width $3\frac{1}{2}$ "). Made on a flake of dolerite, the flake surface forms the entire surface of one side of the implement.
2. Small axe of dolerite, unpolished, with use marks and slightly curved blade.
3. Broken blade only of polished axe of dolerite. Curved (width $3\frac{3}{4}$ ").
4. Broken blade end of chisel of dolerite. Curved blade, polished on one side (width c.1"). Circular section.
5. Disc, bifacially worked, polished in centre of one side.
6. Pecked greenstone axe with polished blade, butt end broken. Oval section, blade much damaged. (? Medium-large).
7. Medium-small, unpolished, dolerite axe, irregular curved blade, ? unfinished.
8. Piece of pecked mica schist 'palette', $\frac{3}{4}$ " thick.
9. Ball of greenstone, $2\frac{1}{4}$ " diameter. Pecked.
10. Broken end of rectangular sectioned pestle of granite. Pecked.



100. Billamrayan Gudda. Dolerite Flakes
and Blades. All with use marks.

- 1 and 2. Complete blade.
- 3 and 13. Central sections of blades.
- 4, 8, 9 and 10. Flakes.
- 5. Blade with retouch across distal end.
- 6. Flakes with retouched end.
- 7. Distal end of blade.
- 11 and 12. Proximal ends of blades.



101. Piklihal, Surface Collection.
Dolerite Flakes and Blades.
All used.

1. Notched blade.

2,4,7,8 and 9 - Flakes.

3. Blade.

5 and 6 flakes from polished axe blades.



PIKLIHAL †

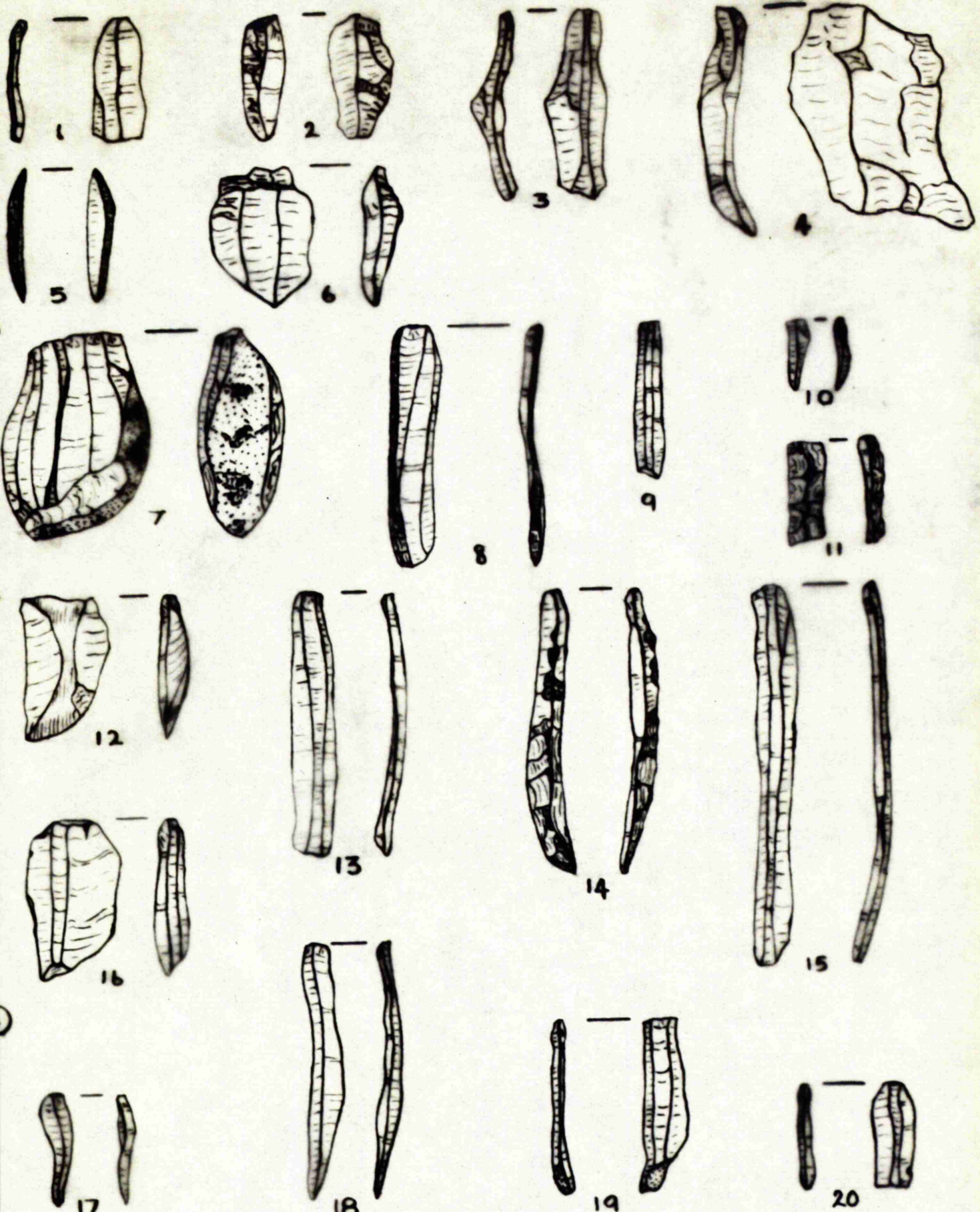
102. Piklihal Excavations, Site I. Microliths.
All of Chert or Chalcedony, except 12.

Layer 1. 1 and 3 - blades.
2, 4 and 6 - flakes.
5 - ? lunate.

Layer 2. 7 - blade core.
8 - backed blade.
9 and 10 - sections of blades.
11 section of core trimming flake.

Layer 3. 12 - Flake from polished axe blade (of
dolerite.
13 and 15 - Complete blades.
14 - Core trimming flake.
16 - Flake.

Layer 4. 17 - ? point.
18 - Blade.
19 and 20 - Sections of blades.



PIKLIHAL SITE I

103. Piklihal Excavations. Site I. Microliths.
All of Chert or Chalcedony.

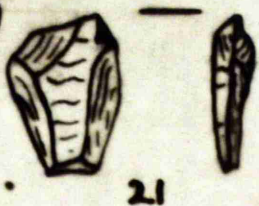
Layer 5. 21 - Flake.
22 and 23 - Sections of Blades.
24 - Broken lunate.

Layer 7. 25 - 28 Sections of blades.

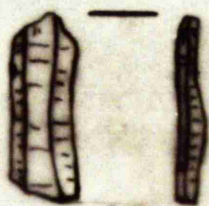
Surface Collection - Microliths.
All of Chert or Chalcedony.

29 and 33 - Complete blades.
30 - Core trimming Flake.
31 - Flake.
32 and 43 - Sections of blades.
34 - ? point.
35, 39 and 42 - lunates.
36 - Backed blade.
37 - Blade blunted at both ends.
38 - Blade core.
40 - Triangle.
41.- Piece of backed blade.

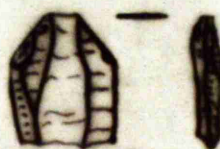
3



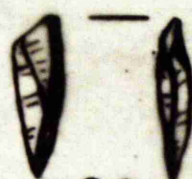
21



22

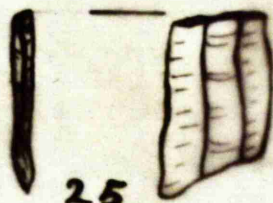


23



24

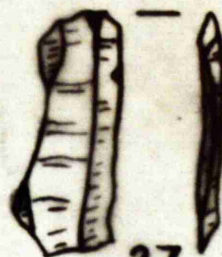
7



25



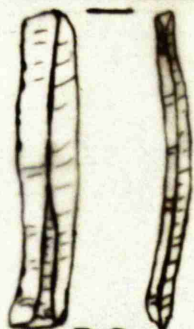
26



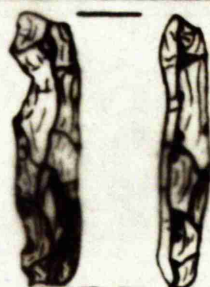
27



28



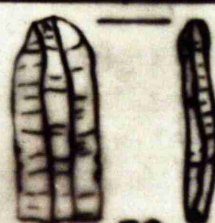
29



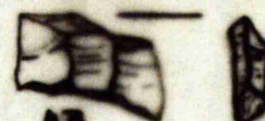
30



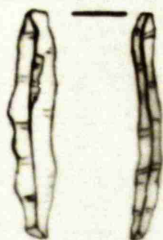
31



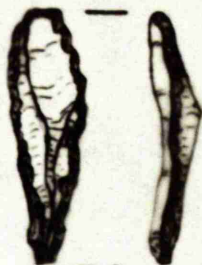
32



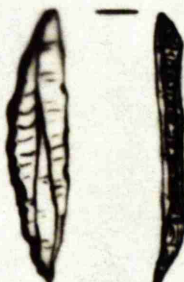
33



35



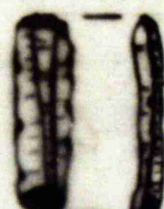
34



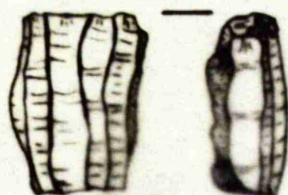
35



36



37



38



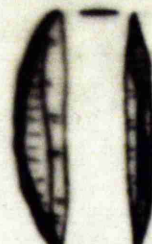
39



40



41



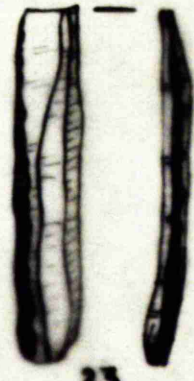
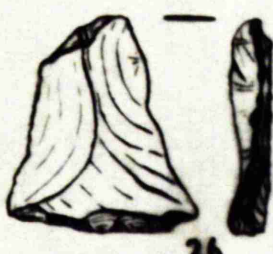
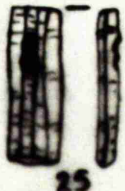
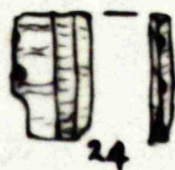
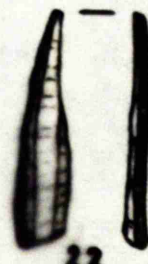
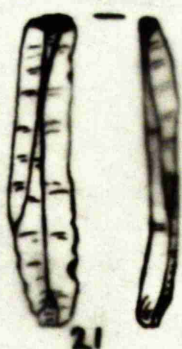
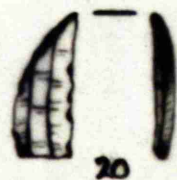
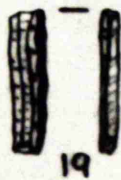
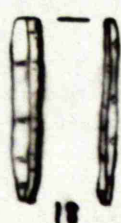
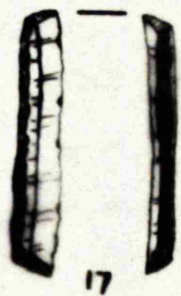
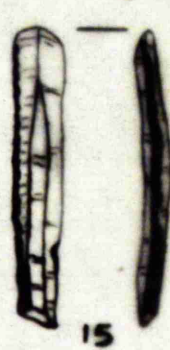
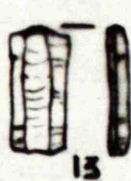
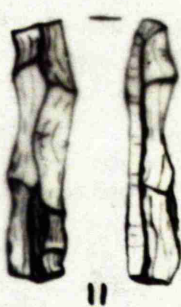
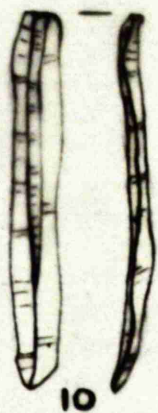
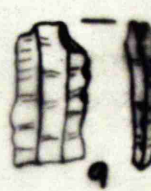
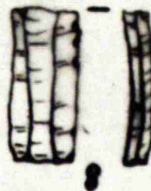
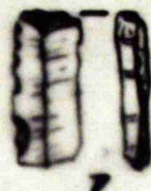
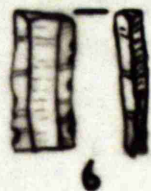
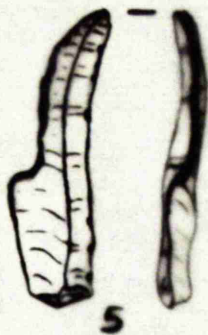
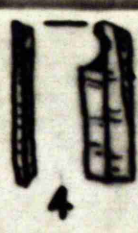
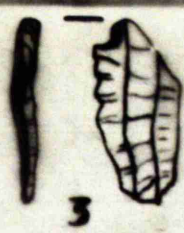
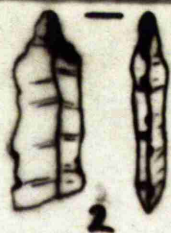
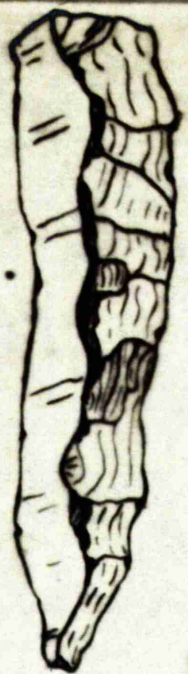
42

PIKLIHAL

+

104. Piklihal Excavations, Site VII. Microliths.
All of Chert or Chalcedony.

1. Large Core trimming flake, Layer 5.
2. Section of blade, notched at one end. Layer 6
3. and 4. ? micro-burins, Layer 7.
5. Retouched blade, ? unfinished. Layer 10.
6. Central Section of used blade. Layer 4.
7. Ditto. Layer 6.
8. Ditto. Layer 8.
9. Ditto. Layer 6.
10. Complete blade, no signs of use. Layer 0.
11. Core trimming flake. Layer 1.
12. Used blade, Layer 2.
13. Central section of blade, worked at one end, Layer 3.
14. ? Point, Layer 3.
15. Complete backed blade. Layer 6.
16. Point. Layer 4.
17. Backed blade, worked at one end. Layer 4.
18. Backed blade. Layer 8.
19. Backed Blade, Layer 8.
20. Broken lunate, Layer 10.
21. Blade with retouched end. Layer 10.
22. Point. Layer 10.
23. Backed blade. Layer 11.
24. Central section of blade. Layer 10.
25. Central section of blade. Layer 10.
26. End scraper on flake. Layer 10.



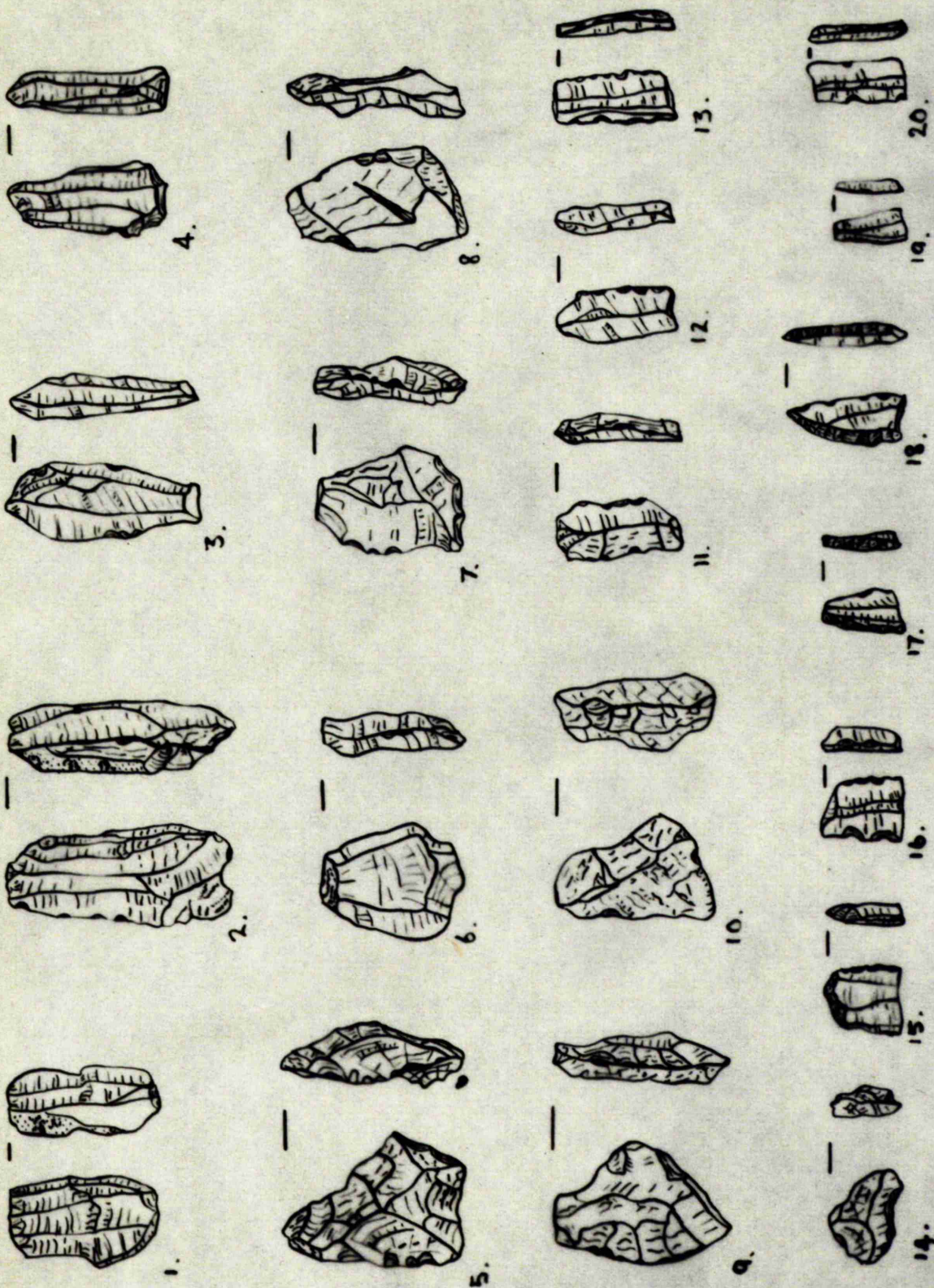
PIKLIHAL

SITE VII

1

105. Billamrayan Gudda. Surface Collection.
Microliths. All Chert and Chalcedony,
except Nos. 5, 9 and 10 which are quartz.

- 1 - 4. Blade cores.
- 5 - 10 and 14 used flakes.
- 11 and 15 - Sections of blades worked at one end.
- 12, 13, 16, 19 and 20 - Sections of blades.
- 17 - Broken point.
- 18 - Broken lunate.



BILLAMRAYAN GUDDA +

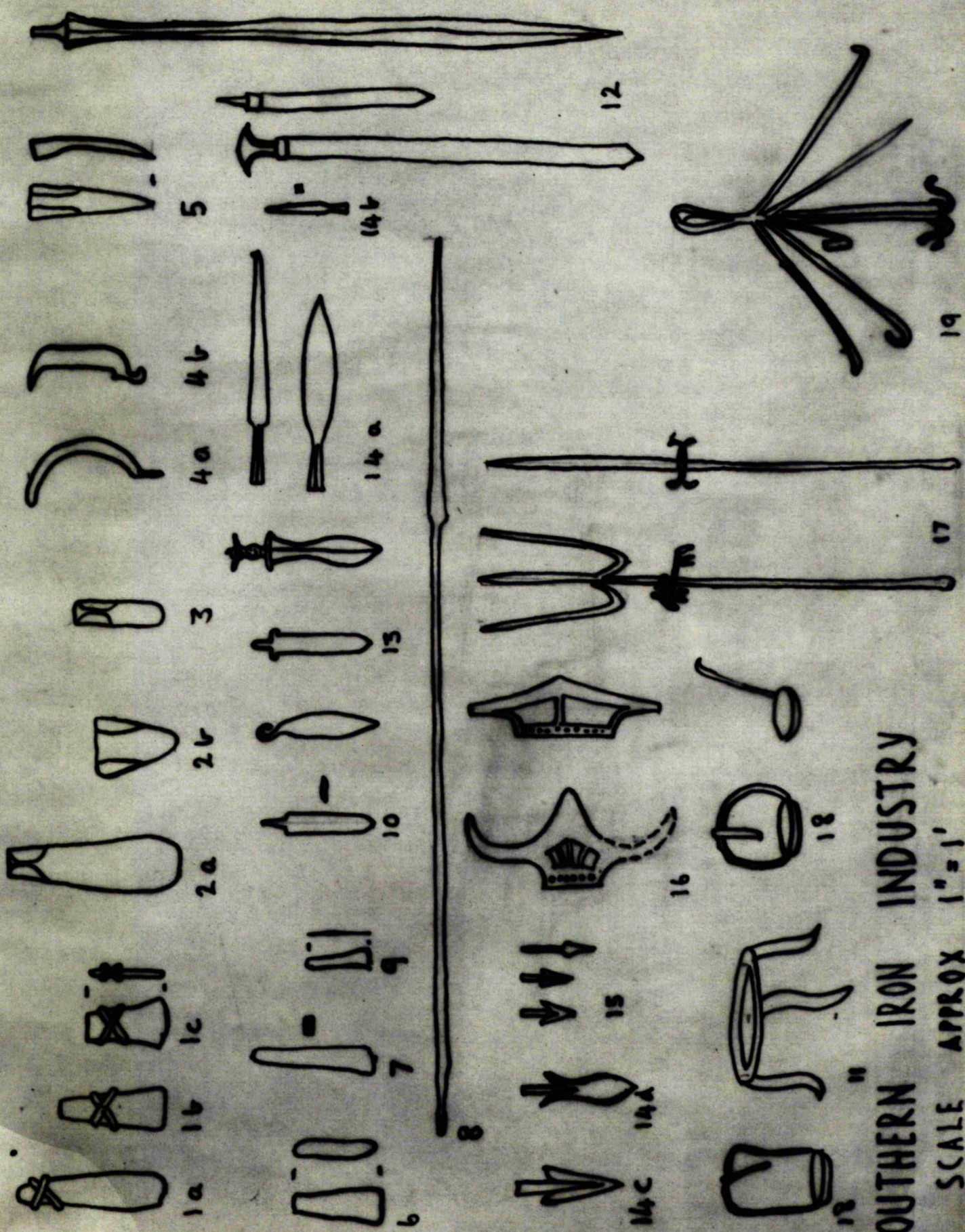
106. Krishna Bridge (Site No. 86) Surface
Collection - Microliths.
All Chert and Chalcedony except 5 and
26 (quartz).

- 1 - 3. Blade cores.
- 4 - 6 and 26. Points.
- 7. Flake, retouched at one end.
- 8 and 9. Blades.
- 10 - Lunate.
- 11 - Section of blade, worked at one end.
- 12.- ? lunate.
- 13 - Truncated blade.
- 14 and 15 notched blades (notches at end).
- 16, 17 and 24 "Micro-burins".
- 18 - 22 ? Burins.
- 23 - Section of backed blade with notch.
- 25 and 27 - Sections of blades.
- 28 - Core trimming flake.



KRISHNA BRIDGE †

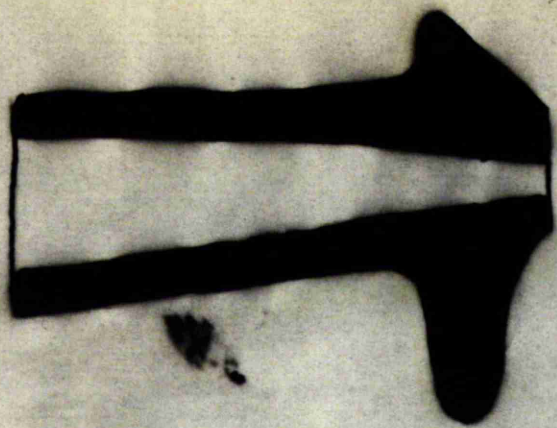
107. S. Indian Iron Technology.
(Drawing).



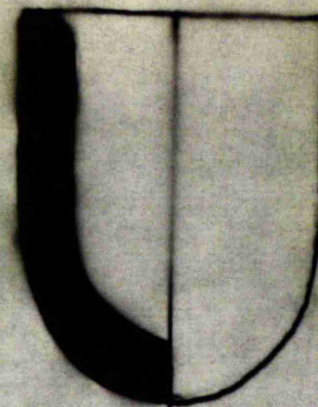
SOUTHERN IRON INDUSTRY

SCALE APPROX 1"=1'

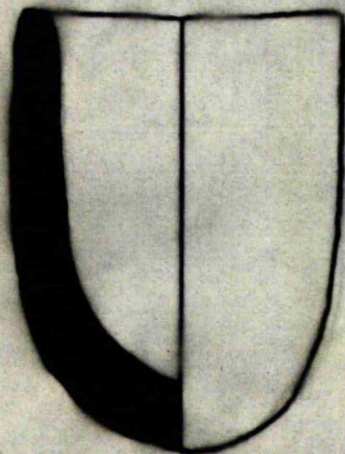
108. Metal Technology: Crucibles and Tuyere.
(Drawing).



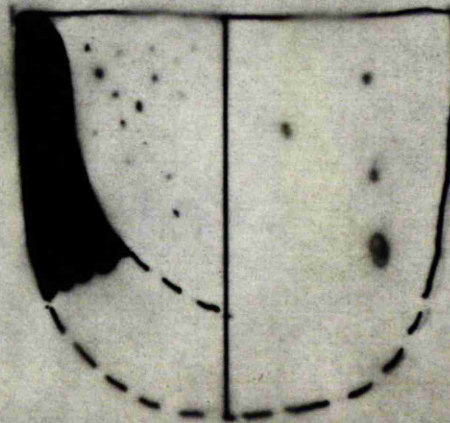
1. CHANDRAVALLI



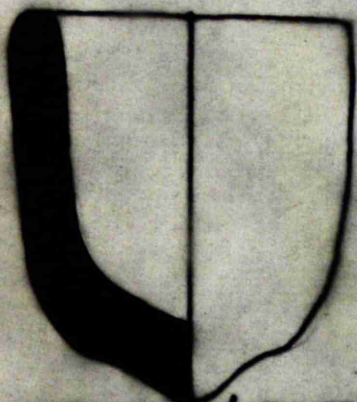
2. CHANDRAVALLI



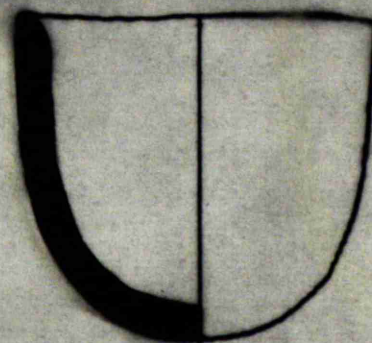
3. KOPBAL (NO 36.34)



4. SIRWAR (NO 59.20)



5. BANGARH (STR V)



6. TAXILA (SIRKAP III)

METAL TECHNOLOGY

1. TUYERE

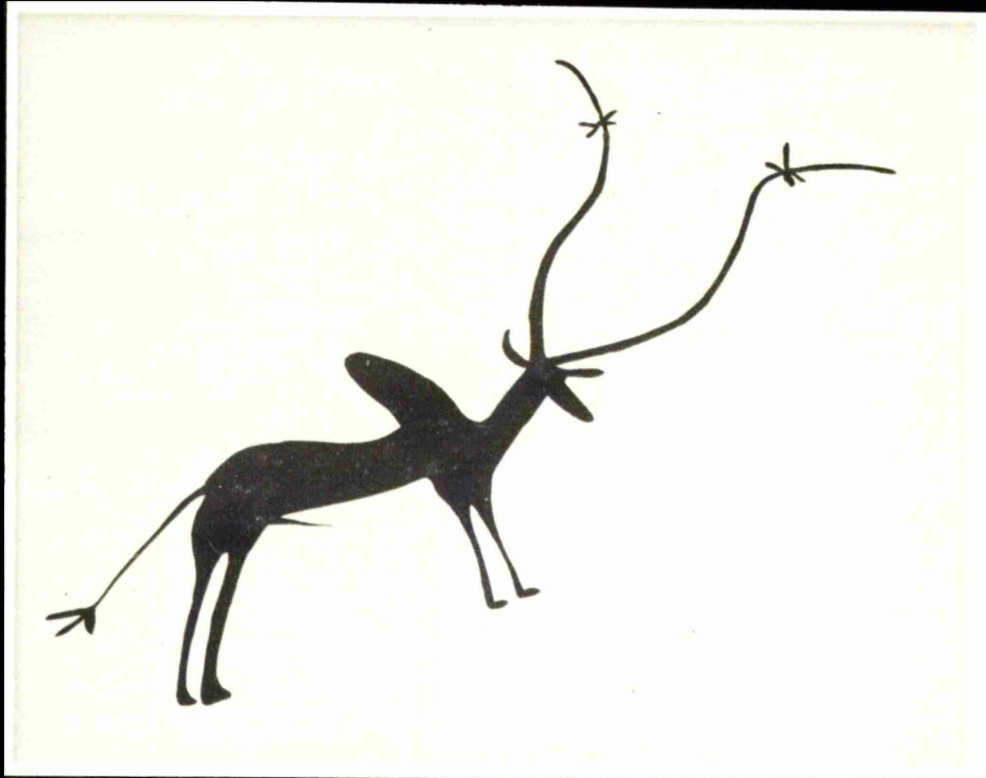
2-5 CRUCIBLES

SCALE 1/2 FULL SIZE

Pls. 109 - 114 Rock Paintings and Bruisings.

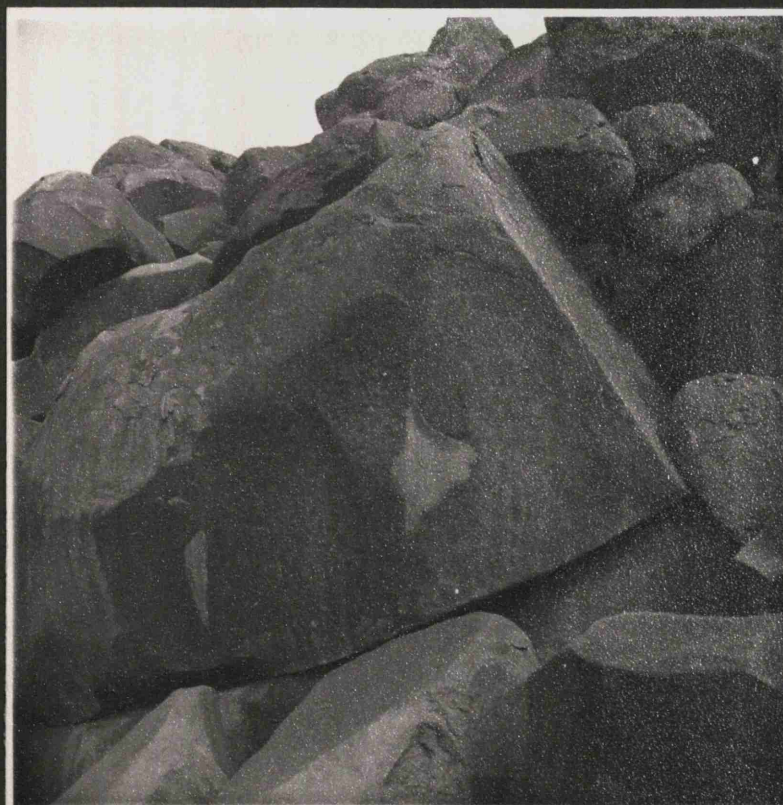
109. a) Humped Bull with decorated horns.
Painted in red ochre, from a
tracing of original. Piklihal.
- b) Humped bull with (?) object between
horns. Bruised on rock. Other
smaller human and animal figures.
Maski.

(Photos.)



110. a) Bruised Human figures on rock.
Piklihal, West of Area M.
- b) Human figures, one with staff,
and other objects. Piklihal,
near Site VI.

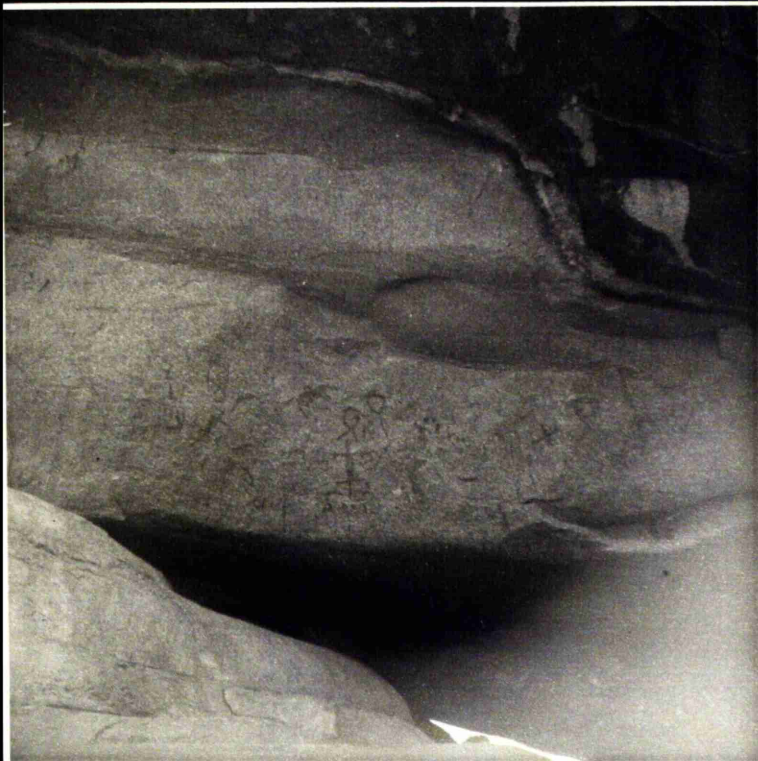
(Photos.)



111.

- a) Ochre painted figures from cave in Area M. (Piklihal)
- b) Ochre painted figures from cave in Area N. (Piklihal)

(Photos.)

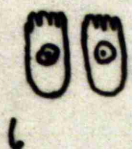
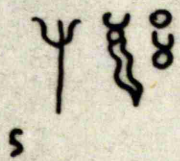
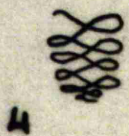
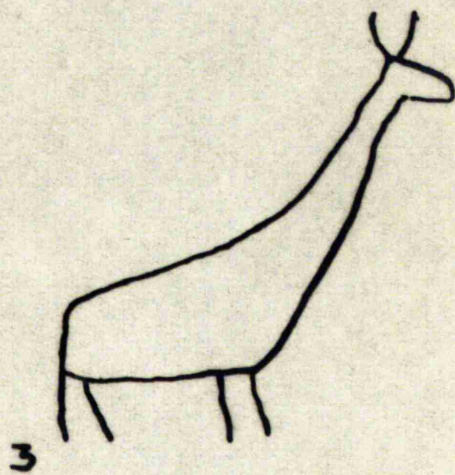
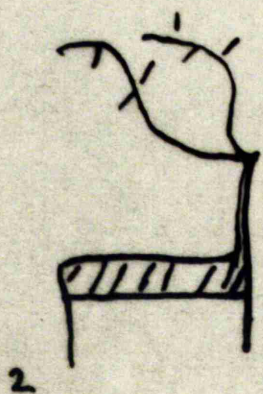
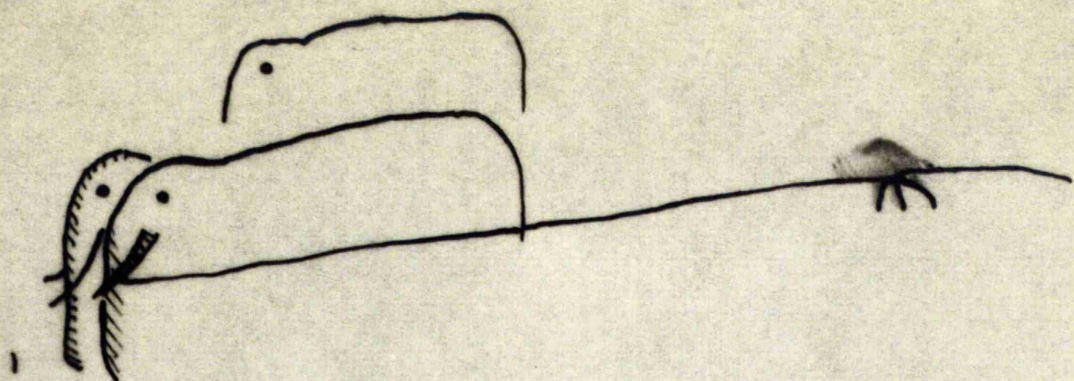


112. a) Outline of bull engraved near
 Area M. (Piklihal)
- b) Stone Alignment A.II at Site 15.
- (Photos.)



113. 1 - 3. Rock paintings from Kopbal,
cave.
4 - 6. Engravings, from Kopbal, cave.
7. Painting from Kopbal, rock shelter.

(Eye copy sketches).



KOPBAL ROCK ENGRAVINGS & PAINTINGS

114. Rock painting from Benkal forest.

(After copy by H.A.D.)

